SEQUENCE LISTING

Replaced with Sequence listing received 27 Sept. 2001

<110> Fischer, Robert L.
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6/28/02

<120> Nucleic Acids That Control Seed and Fruit
Development in Plants

<130> 023070-086120US

<140> 09/177,249
<141> 1998-10-22

<150> US 09/071,838
<151> 1998-05-01

<160> 324

<170> PatentIn Ver. 2.0

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<223> fertilization-independent endosperm 1 (FIE1) cDNA

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aac cat gag gac gat ggt gag ggt ttg cca ccc gaa cta aat cag ata    102
Asn His Glu Asp Asp Gly Glu Gly Leu Pro Pro Glu Leu Asn Gln Ile
  5                  10                  15                  20

aaa gag caa atc gaa aag gag aga ttt ctg cat atc aag aga aaa ttc    150
Lys Glu Gln Ile Glu Lys Glu Arg Phe Leu His Ile Lys Arg Lys Phe
                25                  30                  35

gag ctg aga tac att cca agt gtg gct act cat gct tca cac cat caa    198
Glu Leu Arg Tyr Ile Pro Ser Val Ala Thr His Ala Ser His His Gln
                40                  45                  50

tcg ttt gac tta aac cag ccc gct gca gag gat gat aat gga gga gac    246
Ser Phe Asp Leu Asn Gln Pro Ala Ala Glu Asp Asp Asn Gly Gly Asp
            55                  60                  65
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aac aaa tca ctt ttg tcg aga atg caa aac cca ctt cgt cat ttc agt    294
Asn Lys Ser Leu Leu Ser Arg Met Gln Asn Pro Leu Arg His Phe Ser
     70                  75                  80

gcc tca tct gat tat aat tct tac gaa gat caa ggt tat gtt ctt gat    342
Ala Ser Ser Asp Tyr Asn Ser Tyr Glu Asp Gln Gly Tyr Val Leu Asp
 85                  90                  95                  100

gag gat caa gat tat gct ctt gaa gaa gat gta cca tta ttt ctt gat    390
Glu Asp Gln Asp Tyr Ala Leu Glu Glu Asp Val Pro Leu Phe Leu Asp
                105                 110                 115

gaa gat gta cca tta tta cca agt gtc aag ctt cca att gtt gag aag    438
Glu Asp Val Pro Leu Leu Pro Ser Val Lys Leu Pro Ile Val Glu Lys
                120                 125                 130

cta cca cga tcc att aca tgg gtc ttc acc aaa agt agc cag ctg atg    486
Leu Pro Arg Ser Ile Thr Trp Val Phe Thr Lys Ser Ser Gln Leu Met
                135                 140                 145

gct gaa agt gat tct gtg att ggt aag aga caa atc tat tat ttg aat    534
Ala Glu Ser Asp Ser Val Ile Gly Lys Arg Gln Ile Tyr Tyr Leu Asn
     150                 155                 160

ggt gag gca cta gaa ttg agc agt gaa gaa gat gag gaa gat gaa gaa    582
Gly Glu Ala Leu Glu Leu Ser Ser Glu Glu Asp Glu Glu Asp Glu Glu
 165                 170                 175                 180

gaa gat gag gaa gaa atc aag aaa gaa aaa tgc gaa ttt tct gaa gat    630
Glu Asp Glu Glu Glu Ile Lys Lys Glu Lys Cys Glu Phe Ser Glu Asp
                185                 190                 195

gta gac cga ttt ata tgg acg gtt ggg cag gac tat ggt ttg gat gat    678
Val Asp Arg Phe Ile Trp Thr Val Gly Gln Asp Tyr Gly Leu Asp Asp
                200                 205                 210

ctg gtc gtg cgg cgt gct ctc gcc aag tac ctc gaa gtg gat gtt tcg    726
Leu Val Val Arg Arg Ala Leu Ala Lys Tyr Leu Glu Val Asp Val Ser
                215                 220                 225

gac ata ttg gaa aga tac aat gaa ctc aag ctt aag aat gat gga act    774
Asp Ile Leu Glu Arg Tyr Asn Glu Leu Lys Leu Lys Asn Asp Gly Thr
     230                 235                 240

gct ggt gag gct tct gat ttg aca tcc aag aca ata act act gct ttc    822
Ala Gly Glu Ala Ser Asp Leu Thr Ser Lys Thr Ile Thr Thr Ala Phe
245                 250                 255                 260

cag gat ttt gct gat aga cgt cat tgc cgt cgt tgc atg ata ttc gat    870
Gln Asp Phe Ala Asp Arg Arg His Cys Arg Arg Cys Met Ile Phe Asp
                265                 270                 275

tgt cat atg cat gag aag tat gag ccc gag tct aga tcc agc gaa gac    918
Cys His Met His Glu Lys Tyr Glu Pro Glu Ser Arg Ser Ser Glu Asp
                280                 285                 290
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aaa tct agt ttg ttt gag gat gaa gat aga caa cca tgc agt gag cat    966
Lys Ser Ser Leu Phe Glu Asp Glu Asp Arg Gln Pro Cys Ser Glu His
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tgt tac ctc aag gtg agg agt gtg aca gaa gct gat cat gtg atg gat   1014
Cys Tyr Leu Lys Val Arg Ser Val Thr Glu Ala Asp His Val Met Asp
    310             315             320

aat gat aac tct ata tca aac aag att gtg gtc tca gat cca aac aac   1062
Asn Asp Asn Ser Ile Ser Asn Lys Ile Val Val Ser Asp Pro Asn Asn
325             330             335             340

act atg tgg acg cct gta gag aag gat ctt tac ttg aaa gga att gag   1110
Thr Met Trp Thr Pro Val Glu Lys Asp Leu Tyr Leu Lys Gly Ile Glu
            345             350             355

ata ttt ggg aga aac agt tgt gat gtt gca tta aac ata ctt cgg ggg   1158
Ile Phe Gly Arg Asn Ser Cys Asp Val Ala Leu Asn Ile Leu Arg Gly
            360             365             370

ctt aag acg tgc cta gag att tac aat tac atg cgc gaa caa gat caa   1206
Leu Lys Thr Cys Leu Glu Ile Tyr Asn Tyr Met Arg Glu Gln Asp Gln
        375             380             385

tgt act atg tca tta gac ctt aac aaa act aca caa aga cac aat cag   1254
Cys Thr Met Ser Leu Asp Leu Asn Lys Thr Thr Gln Arg His Asn Gln
390             395             400

gtt acc aaa aaa gta tct cga aaa agt agt agg tcg gtc cgc aaa aaa   1302
Val Thr Lys Lys Val Ser Arg Lys Ser Ser Arg Ser Val Arg Lys Lys
405             410             415             420

tcg aga ctc cga aaa tat gct cgt tat ccg cct gct tta aag aaa aca   1350
Ser Arg Leu Arg Lys Tyr Ala Arg Tyr Pro Pro Ala Leu Lys Lys Thr
            425             430             435

act agt gga gaa gct aag ttt tat aag cac tac aca cca tgc act tgc   1398
Thr Ser Gly Glu Ala Lys Phe Tyr Lys His Tyr Thr Pro Cys Thr Cys
            440             445             450

aag tca aaa tgt gga cag caa tgc cct tgt tta act cac gaa aat tgc   1446
Lys Ser Lys Cys Gly Gln Gln Cys Pro Cys Leu Thr His Glu Asn Cys
        455             460             465

tgc gag aaa tat tgc ggg tgc tca aag gat tgc aac aat cgc ttt gga   1494
Cys Glu Lys Tyr Cys Gly Cys Ser Lys Asp Cys Asn Asn Arg Phe Gly
    470             475             480

gga tgt aat tgt gca att ggc caa tgc aca aat cga caa tgt cct tgt   1542
Gly Cys Asn Cys Ala Ile Gly Gln Cys Thr Asn Arg Gln Cys Pro Cys
485             490             495             500

ttt gct gct aat cgt gaa tgc gat cca gat ctt tgt cgg agt tgt cct   1590
Phe Ala Ala Asn Arg Glu Cys Asp Pro Asp Leu Cys Arg Ser Cys Pro
            505             510             515
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ctt agc tgt gga gat ggc act ctt ggt gag aca cca gtg caa atc caa      1638
Leu Ser Cys Gly Asp Gly Thr Leu Gly Glu Thr Pro Val Gln Ile Gln
        520                 525                 530

tgc aag aac atg caa ttc ctc ctt caa acc aat aaa aag att ctc att      1686
Cys Lys Asn Met Gln Phe Leu Leu Gln Thr Asn Lys Lys Ile Leu Ile
        535                 540                 545

gga aag tct gat gtt cat gga tgg ggt gca ttt aca tgg gac tct ctt      1734
Gly Lys Ser Asp Val His Gly Trp Gly Ala Phe Thr Trp Asp Ser Leu
        550                 555                 560

aaa aag aat gag tat ctc gga gaa tat act gga gaa ctg atc act cat      1782
Lys Lys Asn Glu Tyr Leu Gly Glu Tyr Thr Gly Glu Leu Ile Thr His
565                 570                 575                 580

gat gaa gct aat gag cgt ggg aga ata gaa gat cgg att ggt tct tcc      1830
Asp Glu Ala Asn Glu Arg Gly Arg Ile Glu Asp Arg Ile Gly Ser Ser
                585                 590                 595

tac ctc ttt acc ttg aat gat cag ctc gaa atc gat gct cgc cgt aaa      1878
Tyr Leu Phe Thr Leu Asn Asp Gln Leu Glu Ile Asp Ala Arg Arg Lys
            600                 605                 610

gga aac gag ttc aaa ttt ctc aat cac tca gca aga cct aac tgc tac      1926
Gly Asn Glu Phe Lys Phe Leu Asn His Ser Ala Arg Pro Asn Cys Tyr
            615                 620                 625

gcc aag ttg atg att gtg aga gga gat cag agg att ggt cta ttt gcg      1974
Ala Lys Leu Met Ile Val Arg Gly Asp Gln Arg Ile Gly Leu Phe Ala
        630                 635                 640

gag aga gca atc gaa gaa ggt gag gag ctt ttc ttc gac tac tgc tat      2022
Glu Arg Ala Ile Glu Glu Gly Glu Glu Leu Phe Phe Asp Tyr Cys Tyr
645                 650                 655                 660

gga cca gaa cat gcg gat tgg tcg cgt ggt cga gaa cct aga aag act      2070
Gly Pro Glu His Ala Asp Trp Ser Arg Gly Arg Glu Pro Arg Lys Thr
                665                 670                 675

ggt gct tct aaa agg tct aag gaa gcc cgt cca gct cgt tagtttttga      2119
Gly Ala Ser Lys Arg Ser Lys Glu Ala Arg Pro Ala Arg
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tctgaggaga agcagca                                                    2136


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                20   25   30

Lys Arg Lys Phe Glu Leu Arg Tyr Ile Pro Ser Val Ala Thr His Ala
        35   40   45

Ser His His Gln Ser Phe Asp Leu Asn Gln Pro Ala Ala Glu Asp Asp
    50   55   60

Asn Gly Gly Asp Asn Lys Ser Leu Leu Ser Arg Met Gln Asn Pro Leu
65   70   75   80

Arg His Phe Ser Ala Ser Ser Asp Tyr Asn Ser Tyr Glu Asp Gln Gly
            85   90   95

Tyr Val Leu Asp Glu Asp Gln Asp Tyr Ala Leu Glu Glu Asp Val Pro
        100   105   110

Leu Phe Leu Asp Glu Asp Val Pro Leu Leu Pro Ser Val Lys Leu Pro
        115   120   125

Ile Val Glu Lys Leu Pro Arg Ser Ile Thr Trp Val Phe Thr Lys Ser
    130   135   140

Ser Gln Leu Met Ala Glu Ser Asp Ser Val Ile Gly Lys Arg Gln Ile
145   150   155   160

Tyr Tyr Leu Asn Gly Glu Ala Leu Glu Leu Ser Ser Glu Glu Asp Glu
            165   170   175

Glu Asp Glu Glu Glu Asp Glu Glu Glu Ile Lys Lys Glu Lys Cys Glu
            180   185   190

Phe Ser Glu Asp Val Asp Arg Phe Ile Trp Thr Val Gly Gln Asp Tyr
    195   200   205

Gly Leu Asp Asp Leu Val Val Arg Arg Ala Leu Ala Lys Tyr Leu Glu
    210   215   220

Val Asp Val Ser Asp Ile Leu Glu Arg Tyr Asn Glu Leu Lys Leu Lys
225   230   235   240

Asn Asp Gly Thr Ala Gly Glu Ala Ser Asp Leu Thr Ser Lys Thr Ile
            245   250   255

Thr Thr Ala Phe Gln Asp Phe Ala Asp Arg Arg His Cys Arg Arg Cys
            260   265   270

Met Ile Phe Asp Cys His Met His Glu Lys Tyr Glu Pro Glu Ser Arg
            275   280   285

Ser Ser Glu Asp Lys Ser Ser Leu Phe Glu Asp Glu Asp Arg Gln Pro
    290   295   300

Cys Ser Glu His Cys Tyr Leu Lys Val Arg Ser Val Thr Glu Ala Asp
305   310   315   320

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His Val Met Asp Asn Asp Asn Ser Ile Ser Asn Lys Ile Val Val Ser
                325             330             335

Asp Pro Asn Asn Thr Met Trp Thr Pro Val Glu Lys Asp Leu Tyr Leu
                340             345             350

Lys Gly Ile Glu Ile Phe Gly Arg Asn Ser Cys Asp Val Ala Leu Asn
                355             360             365

Ile Leu Arg Gly Leu Lys Thr Cys Leu Glu Ile Tyr Asn Tyr Met Arg
    370             375             380

Glu Gln Asp Gln Cys Thr Met Ser Leu Asp Leu Asn Lys Thr Thr Gln
385             390             395             400

Arg His Asn Gln Val Thr Lys Lys Val Ser Arg Lys Ser Ser Arg Ser
                405             410             415

Val Arg Lys Lys Ser Arg Leu Arg Lys Tyr Ala Arg Tyr Pro Pro Ala
                420             425             430

Leu Lys Lys Thr Thr Ser Gly Glu Ala Lys Phe Tyr Lys His Tyr Thr
    435             440             445

Pro Cys Thr Cys Lys Ser Lys Cys Gly Gln Gln Cys Pro Cys Leu Thr
    450             455             460

His Glu Asn Cys Cys Glu Lys Tyr Cys Gly Cys Ser Lys Asp Cys Asn
465             470             475             480

Asn Arg Phe Gly Gly Cys Asn Cys Ala Ile Gly Gln Cys Thr Asn Arg
                485             490             495

Gln Cys Pro Cys Phe Ala Ala Asn Arg Glu Cys Asp Pro Asp Leu Cys
                500             505             510

Arg Ser Cys Pro Leu Ser Cys Gly Asp Gly Thr Leu Gly Glu Thr Pro
    515             520             525

Val Gln Ile Gln Cys Lys Asn Met Gln Phe Leu Leu Gln Thr Asn Lys
    530             535             540

Lys Ile Leu Ile Gly Lys Ser Asp Val His Gly Trp Gly Ala Phe Thr
545             550             555             560

Trp Asp Ser Leu Lys Lys Asn Glu Tyr Leu Gly Glu Tyr Thr Gly Glu
                565             570             575

Leu Ile Thr His Asp Glu Ala Asn Glu Arg Gly Arg Ile Glu Asp Arg
                580             585             590

Ile Gly Ser Ser Tyr Leu Phe Thr Leu Asn Asp Gln Leu Glu Ile Asp
    595             600             605

Ala Arg Arg Lys Gly Asn Glu Phe Lys Phe Leu Asn His Ser Ala Arg
610             615             620
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Pro Asn Cys Tyr Ala Lys Leu Met Ile Val Arg Gly Asp Gln Arg Ile
625                 630             635             640

Gly Leu Phe Ala Glu Arg Ala Ile Glu Glu Gly Glu Glu Leu Phe Phe
            645             650             655

Asp Tyr Cys Tyr Gly Pro Glu His Ala Asp Trp Ser Arg Gly Arg Glu
        660             665             670

Pro Arg Lys Thr Gly Ala Ser Lys Arg Ser Lys Glu Ala Arg Pro Ala
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agttgttgtt gcatgagaga cttgtgagct tagattagtg tgcgagagtc agacagagag  180

agagatttcg aatatcga atg tcg aag ata acc tta ggg aac gag tca ata   231
                    Met Ser Lys Ile Thr Leu Gly Asn Glu Ser Ile
                     1               5                   10

gtt ggg tct ttg act cca tcg aat aag aaa tcg tac aaa gtg acg aat   279
Val Gly Ser Leu Thr Pro Ser Asn Lys Lys Ser Tyr Lys Val Thr Asn
            15                  20                  25

agg att cag gaa ggg aag aaa cct ttg tat gct gtt gtt ttc aac ttc   327
Arg Ile Gln Glu Gly Lys Lys Pro Leu Tyr Ala Val Val Phe Asn Phe
        30                  35                  40

ctt gat gct cgt ttc ttc gat gtc ttc gtt acc gct ggt gga aat cgg   375
Leu Asp Ala Arg Phe Phe Asp Val Phe Val Thr Ala Gly Gly Asn Arg
    45                  50                  55

att act ctg tac aat tgt ctc gga gat ggt gcc ata tca gca ttg caa   423
Ile Thr Leu Tyr Asn Cys Leu Gly Asp Gly Ala Ile Ser Ala Leu Gln
60                  65                  70                  75

tcc tat gct gat gaa gat aag gaa gag tcg ttt tac acg gta agt tgg   471
Ser Tyr Ala Asp Glu Asp Lys Glu Glu Ser Phe Tyr Thr Val Ser Trp
                80                  85                  90
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gcg tgt ggc gtt aat ggg aac cca tat gtt gcg gct gga gga gta aaa    519
Ala Cys Gly Val Asn Gly Asn Pro Tyr Val Ala Ala Gly Gly Val Lys
             95                100                105

ggt ata atc cga gtc att gac gtc aac agt gaa acg att cat aag agt    567
Gly Ile Ile Arg Val Ile Asp Val Asn Ser Glu Thr Ile His Lys Ser
             110                115                120

ctt gtg ggt cat gga gat tca gtg aac gaa atc agg aca caa cct tta    615
Leu Val Gly His Gly Asp Ser Val Asn Glu Ile Arg Thr Gln Pro Leu
     125                130                135

aaa cct caa ctt gtg att act gct agc aag gat gaa tct gtt cgt ttg    663
Lys Pro Gln Leu Val Ile Thr Ala Ser Lys Asp Glu Ser Val Arg Leu
140                145                150                155

tgg aat gtt gaa act ggg ata tgt att ttg ata ttt gct gga gct gga    711
Trp Asn Val Glu Thr Gly Ile Cys Ile Leu Ile Phe Ala Gly Ala Gly
             160                165                170

ggt cat cgc tat gaa gtt cta agt gtg gat ttt cat ccg tct gat att    759
Gly His Arg Tyr Glu Val Leu Ser Val Asp Phe His Pro Ser Asp Ile
             175                180                185

tac cgc ttt gct agt tgt ggt atg gac acc act att aaa ata tgg tca    807
Tyr Arg Phe Ala Ser Cys Gly Met Asp Thr Thr Ile Lys Ile Trp Ser
             190                195                200

atg aaa gag ttt tgg acg tac gtc gag aag tca ttc aca tgg act gat    855
Met Lys Glu Phe Trp Thr Tyr Val Glu Lys Ser Phe Thr Trp Thr Asp
     205                210                215

gat cca tca aaa ttc ccc aca aaa ttt gtc caa ttc cct gta ttt aca    903
Asp Pro Ser Lys Phe Pro Thr Lys Phe Val Gln Phe Pro Val Phe Thr
220                225                230                235

gct tcc att cat aca aat tat gta gat tgt aac cgt tgg ttt ggt gat    951
Ala Ser Ile His Thr Asn Tyr Val Asp Cys Asn Arg Trp Phe Gly Asp
             240                245                250

ttt atc ctc tca aag agt gtg gac aac gag atc ctg ttg tgg gaa cca    999
Phe Ile Leu Ser Lys Ser Val Asp Asn Glu Ile Leu Leu Trp Glu Pro
             255                260                265

caa ctg aaa gag aat tct cct ggc gag gga gct tca gat gtt cta tta   1047
Gln Leu Lys Glu Asn Ser Pro Gly Glu Gly Ala Ser Asp Val Leu Leu
             270                275                280

aga tac ccg gtt cca atg tgt gat att tgg ttt atc aag ttt tct tgt   1095
Arg Tyr Pro Val Pro Met Cys Asp Ile Trp Phe Ile Lys Phe Ser Cys
     285                290                295

gac ctc cat tta agt tct gtt gcg ata ggt aat cag gaa gga aag gtt   1143
Asp Leu His Leu Ser Ser Val Ala Ile Gly Asn Gln Glu Gly Lys Val
300                305                310                315
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tat gtc tgg gat ttg aaa agt tgc cct cct gtt ttg att aca aag tta    1191
Tyr Val Trp Asp Leu Lys Ser Cys Pro Pro Val Leu Ile Thr Lys Leu
            320             325             330

tca cac aat caa tca aag tct gta atc agg caa aca gcc atg tct gtc    1239
Ser His Asn Gln Ser Lys Ser Val Ile Arg Gln Thr Ala Met Ser Val
            335             340             345

gat gga agc acg att ctt gct tgc tgc gag gac ggg act ata tgg cgc    1287
Asp Gly Ser Thr Ile Leu Ala Cys Cys Glu Asp Gly Thr Ile Trp Arg
            350             355             360

tgg gac gtg att acc aag tagcggtctg agtcttgtag gaattgatga          1335
Trp Asp Val Ile Thr Lys
        365

attaggagtg cgaagaaatg agatatccat tcttttattg taattctgat catgttgcta 1395

ctccctgaga ccttgagatg ctctttgtag ccttgttaac gtccaccctt gtaccacagt 1455

gtataccctt tctggagatt ttgtcttatt ctcttagttc aatacacaag gctgtatcct 1515

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            20                  25                  30

Lys Lys Pro Leu Tyr Ala Val Val Phe Asn Phe Leu Asp Ala Arg Phe
            35                  40                  45

Phe Asp Val Phe Val Thr Ala Gly Gly Asn Arg Ile Thr Leu Tyr Asn
    50                  55                  60

Cys Leu Gly Asp Gly Ala Ile Ser Ala Leu Gln Ser Tyr Ala Asp Glu
 65                  70                  75                  80

Asp Lys Glu Glu Ser Phe Tyr Thr Val Ser Trp Ala Cys Gly Val Asn
                85                  90                  95

Gly Asn Pro Tyr Val Ala Ala Gly Gly Val Lys Gly Ile Ile Arg Val
            100                 105                 110

Ile Asp Val Asn Ser Glu Thr Ile His Lys Ser Leu Val Gly His Gly
            115                 120                 125

Asp Ser Val Asn Glu Ile Arg Thr Gln Pro Leu Lys Pro Gln Leu Val
            130                 135                 140
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Ile Thr Ala Ser Lys Asp Glu Ser Val Arg Leu Trp Asn Val Glu Thr
145   150   155   160

Gly Ile Cys Ile Leu Ile Phe Ala Gly Ala Gly Gly His Arg Tyr Glu
            165   170   175

Val Leu Ser Val Asp Phe His Pro Ser Asp Ile Tyr Arg Phe Ala Ser
        180   185   190

Cys Gly Met Asp Thr Thr Ile Lys Ile Trp Ser Met Lys Glu Phe Trp
    195   200   205

Thr Tyr Val Glu Lys Ser Phe Thr Trp Thr Asp Asp Pro Ser Lys Phe
    210   215   220

Pro Thr Lys Phe Val Gln Phe Pro Val Phe Thr Ala Ser Ile His Thr
225   230   235   240

Asn Tyr Val Asp Cys Asn Arg Trp Phe Gly Asp Phe Ile Leu Ser Lys
            245   250   255

Ser Val Asp Asn Glu Ile Leu Leu Trp Glu Pro Gln Leu Lys Glu Asn
        260   265   270

Ser Pro Gly Glu Gly Ala Ser Asp Val Leu Leu Arg Tyr Pro Val Pro
    275   280   285

Met Cys Asp Ile Trp Phe Ile Lys Phe Ser Cys Asp Leu His Leu Ser
    290   295   300

Ser Val Ala Ile Gly Asn Gln Glu Gly Lys Val Tyr Val Trp Asp Leu
305   310   315   320

Lys Ser Cys Pro Pro Val Leu Ile Thr Lys Leu Ser His Asn Gln Ser
            325   330   335

Lys Ser Val Ile Arg Gln Thr Ala Met Ser Val Asp Gly Ser Thr Ile
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Leu Ala Cys Cys Glu Asp Gly Thr Ile Trp Arg Trp Asp Val Ile Thr
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Lys

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<223> fertilization-independent endosperm 3 (FIE3)
      WD40/polycomb gene genomic sequence

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caacaataag gcatgagaaa tgtgattatc gtcaaatcat gattgctaca tgacaaatcg 180

atcttaattt tgaaaaagag acatttaaat attcaaaaaa cggtaaaaat ttctttaaga 240

ccaaccatgg aaataacatg agaagactga gaggagatt agaacttaca acaagagaat 300

cttttttcctt caatattttt tttaaacact tttcttttgt agggaatttg ataatatgaa 360

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atctacggct agaattttcg gtcggtttta tactttatat agatgctaga tttttttctt 480

ctagtcatcg tttattagta caattttgtt tttatatatt gattacttga atttataata 540

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attttactt agattctcaa actattgaaa aatatccaaa atatccggaa aatttcaatt 660

taatcgaata aaaaaattag aatggaaaga ataaaaaatt atcgggtaca attagaagag 720

taatgtgttt agtttggttt ttactcggat accagttcag ttttcacgta ttattcgatc 780

ctataggagc aattgtgaat tagttgtgag attttgggag cattcgcttc cagaacttag 840

tgctaggaga aatgctattt tcctataaga gttgtacgag gaagcgagca agtacacaac 900

aaccacaaaa gctttcaata cttgtttact cctagggttt aaaactagag gttctataga 960

tctctaaatt tttttgaaca aatgtgtttt ccacacgtga tattctacaa taccactcga 1020

aaattatcca taattgcttt aaactatttt tttgtttaaa ttatataatt tgtaccgttg 1080

taaactgatt atttcaaatt ataattaaag cactataatt tcatatatta cattcaacat 1140

atattaaaat aaactataac catgtatttt tttgtcttcc tttcctataa acattgattg 1200

gactctatcg taaattttgt cgttatcgca aattttgtcg ttatcgatga gtttctcaaa 1260

gtttggacct tgattatctt gtttggagat gttcaaatcg ttatatccaa atagtgaact 1320

tctaattttc ttttttgata atgtgactta tttggaaaag tattccaaag tattcaaata 1380

aaccctttaa aaatccatta aatacatttt aaataagtaa aatgctctca acgaagagat 1440

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aataggcgga catcaaacct acttagcaca ctttctattt tcaaattggt tatggtttgt 1560

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tca aag aaa aaa aaa aca cac gac gat tat cca tct gcc ggc tgt gtt   96
Ser Lys Lys Lys Lys Thr His Asp Asp Tyr Pro Ser Ala Gly Cys Val
            20                  25                  30
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cat cgg taa acc tat att tta aaa ctg gtg ggc ttt tca tta cca taa    144
His Arg     Thr Tyr Ile Leu Lys Leu Val Gly Phe Ser Leu Pro
        35                  40                  45

gtt tgg aca tgt ttt tat aat ttg atg tat agt gta gac caa aaa ata    192
Val Trp Thr Cys Phe Tyr Asn Leu Met Tyr Ser Val Asp Gln Lys Ile
    50                  55                  60

gag aaa taa gaa agg gaa cct ttg tgg tga ttg taa caa aac aga aat    240
Glu Lys     Glu Arg Glu Pro Leu Trp     Leu     Gln Asn Arg Asn
65              70                  75                  80

cat tat att gaa tca ttc gaa aag acg aaa aga tca aac ctt tgt agc    288
His Tyr Ile Glu Ser Phe Glu Lys Thr Lys Arg Ser Asn Leu Cys Ser
                85                  90                  95

tag atg acc ata gac gtg gct gcc aat tac agt ctt aat gct ttt ata    336
    Met Thr Ile Asp Val Ala Ala Asn Tyr Ser Leu Asn Ala Phe Ile
        100                 105                 110

tag atc ttt ctt aca tcc tct gtt cct tca cat tca aga aac agt atc    384
    Ile Phe Leu Thr Ser Ser Val Pro Ser His Ser Arg Asn Ser Ile
        115                 120                 125

atc cca ttt tct ttc ttc ttc tca gtg ttt caa tct ttg cga att aag    432
Ile Pro Phe Ser Phe Phe Phe Ser Val Phe Gln Ser Leu Arg Ile Lys
    130                 135                 140

atg gaa cat gaa gaa aca caa aag aac aca aga aac agc tgg tcc ctg    480
Met Glu His Glu Glu Thr Gln Lys Asn Thr Arg Asn Ser Trp Ser Leu
145                 150                 155                 160

att cga cca ttt caa atg atc tcc att agc ttt ctt agc ctc ctc ctc    528
Ile Arg Pro Phe Gln Met Ile Ser Ile Ser Phe Leu Ser Leu Leu Leu
                165                 170                 175

cct cta tct ttc ctc ttt ctt tca cgt ctc tct ctc tat acc tcc tca    576
Pro Leu Ser Phe Leu Phe Leu Ser Arg Leu Ser Leu Tyr Thr Ser Ser
            180                 185                 190

act ccg gtc acc gtc tcc ggc gtt tcc tct gtt att cac cag gca gat    624
Thr Pro Val Thr Val Ser Gly Val Ser Ser Val Ile His Gln Ala Asp
        195                 200                 205

gtc gga gtc tta tac acg atc ttg ttt ctc atc atc gtc ttc act tta    672
Val Gly Val Leu Tyr Thr Ile Leu Phe Leu Ile Ile Val Phe Thr Leu
    210                 215                 220

atc cac agt ctc tca gga aaa cca gaa tgc tct gtt ctc cat tcc cat    720
Ile His Ser Leu Ser Gly Lys Pro Glu Cys Ser Val Leu His Ser His
225                 230                 235                 240

ctc tac atc tgc tgg atc gtt ctc ttc atc gcc caa gct tgt gcc ttt    768
Leu Tyr Ile Cys Trp Ile Val Leu Phe Ile Ala Gln Ala Cys Ala Phe
                245                 250                 255
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ggg atc aaa aga acc atg agc acg acc atg tct ata aat cca gac aaa    816
Gly Ile Lys Arg Thr Met Ser Thr Thr Met Ser Ile Asn Pro Asp Lys
            260             265             270

aac ttg ttt ctt gcg aca cat gaa aga tgg atg ttg gtt agg gtt ttg    864
Asn Leu Phe Leu Ala Thr His Glu Arg Trp Met Leu Val Arg Val Leu
            275             280             285

ttc ttt ttg ggg cta cac gaa gtg atg ctg atg tgg ttt aga gtc gtg    912
Phe Phe Leu Gly Leu His Glu Val Met Leu Met Trp Phe Arg Val Val
            290             295             300

gtt aag cct gtg gtt gac aac act ata tat ggg gtc tac gtg gag gag    960
Val Lys Pro Val Val Asp Asn Thr Ile Tyr Gly Val Tyr Val Glu Glu
305             310             315             320

agg tgg tcc gag aga gcc gtt gtg gca gtg acc ttt ggt ata atg tgg   1008
Arg Trp Ser Glu Arg Ala Val Val Ala Val Thr Phe Gly Ile Met Trp
            325             330             335

tgg tgg agg cta aga gat gag gta gaa agt ctt gtg gtg gtg gtt acg   1056
Trp Trp Arg Leu Arg Asp Glu Val Glu Ser Leu Val Val Val Val Thr
            340             345             350

gcg gat aga ctt aac ctc ccc att cgt ttg gag ggt ctc aat ttt gtg   1104
Ala Asp Arg Leu Asn Leu Pro Ile Arg Leu Glu Gly Leu Asn Phe Val
            355             360             365

aac tgg tgt atg tat tac atc tgt gtt gga att ggt tta atg aag atc   1152
Asn Trp Cys Met Tyr Tyr Ile Cys Val Gly Ile Gly Leu Met Lys Ile
            370             375             380

ttc aaa ggg ttt ttg gat ttt gtg aat acg ttg act ttg agc att aag   1200
Phe Lys Gly Phe Leu Asp Phe Val Asn Thr Leu Thr Leu Ser Ile Lys
385             390             395             400

agg tcg aga aaa ggc tgt gaa tca tgt gtt ttt gat gat atg tgt aat   1248
Arg Ser Arg Lys Gly Cys Glu Ser Cys Val Phe Asp Asp Met Cys Asn
            405             410             415

gat gat cat gtg taa gat att tga cat att ata ctc atc tct tga atg   1296
Asp Asp His Val     Asp Ile     His Ile Ile Leu Ile Ser     Met
            420             425             430

ttt ttg aga ttt ttt tat ttt tat ttt cta ttt ctt gct agg aat tta   1344
Phe Leu Arg Phe Phe Tyr Phe Tyr Phe Leu Phe Leu Ala Arg Asn Leu
            435             440             445

acc cgt ata tat gtc aca aaa ata gta gaa tat cag aaa gca aaa ata   1392
Thr Arg Ile Tyr Val Thr Lys Ile Val Glu Tyr Gln Lys Ala Lys Ile
            450             455             460

ttt tat cta aaa ata acc att gaa cat taa ttt aag tct ttt tat aat   1440
Phe Tyr Leu Lys Ile Thr Ile Glu His     Phe Lys Ser Phe Tyr Asn
465             470             475             480
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tat att ttt ata aca cac cct ttt taa gaa aaa ctt gga gat tta att    1488
Tyr Ile Phe Ile Thr His Pro Phe     Glu Lys Leu Gly Asp Leu Ile
                485                  490                 495

aac gtt ata aat agt aaa aaa tat cgg att tac gta gaa gtt tta aat    1536
Asn Val Ile Asn Ser Lys Lys Tyr Arg Ile Tyr Val Glu Val Leu Asn
            500                 505                 510

gcg tat aat taa att tac gaa ttg aat aat ata gcc ata tat ata ttt    1584
Ala Tyr Asn     Ile Tyr Glu Leu Asn Asn Ile Ala Ile Tyr Ile Phe
            515                 520                 525

ttg aag att taa act cat ttt gtt tct tcc ata tat gca taa tat ata    1632
Leu Lys Ile     Thr His Phe Val Ser Ser Ile Tyr Ala     Tyr Ile
        530                 535                 540

agc tta aat aga aaa cta gct agg aat gaa tac taa tat ata taa tga    1680
Ser Leu Asn Arg Lys Leu Ala Arg Asn Glu Tyr     Tyr Ile     
545                 550                 555                 560

cat taa tat aag tct tac cgg aca ctc caa aat gta tat att gat cta    1728
His     Tyr Lys Ser Tyr Arg Thr Leu Gln Asn Val Tyr Ile Asp Leu
            565                 570                 575

tca aca ttt ttt cat tgg ttt act aaa cca agt tgt cac ata aat atg    1776
Ser Thr Phe Phe His Trp Phe Thr Lys Pro Ser Cys His Ile Asn Met
            580                 585                 590

agt taa cgc ctt ttt ttt tat aat att gta tat gaa ttt aaa ctt gag    1824
Ser     Arg Leu Phe Phe Tyr Asn Ile Val Tyr Glu Phe Lys Leu Glu
            595                 600                 605

ctg tca aac gtc aag caa acc caa cat cta cat aca tat agt act ata    1872
Leu Ser Asn Val Lys Gln Thr Gln His Leu His Thr Tyr Ser Thr Ile
    610                 615                 620

ttt tga aaa tta aaa ttt tct taa att tcc cat att att ttc ctt tta    1920
Phe     Lys Leu Lys Phe Ser     Ile Ser His Ile Ile Phe Leu Leu
625                 630                 635                 640

aag caa gca agt cca aat acg ttt ctt cca gat tat aat ttt cct taa    1968
Lys Gln Ala Ser Pro Asn Thr Phe Leu Pro Asp Tyr Asn Phe Pro
                645                 650                 655

taa ggt ttt cta caa aaa aaa atc aac ttc tta ttt aaa aaa ccc ttt    2016
    Gly Phe Leu Gln Lys Lys Ile Asn Phe Leu Phe Lys Lys Pro Phe
            660                 665                 670

gca tta tcc ttt tca cca aca tca gag aag acg aga aaa aaa gaa gag    2064
Ala Leu Ser Phe Ser Pro Thr Ser Glu Lys Thr Arg Lys Lys Glu Glu
            675                 680                 685

gcg agt ggt taa tgg aga agg tta gtt tca ctc caa aca tat atg aat    2112
Ala Ser Gly     Trp Arg Arg Leu Val Ser Leu Gln Thr Tyr Met Asn
690                 695                 700
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tga cta ggt tat gaa atc cat ata ttt taa ttg tgt gtt tat gat aga   2160
    Leu Gly Tyr Glu Ile His Ile Phe     Leu Cys Val Tyr Asp Arg
705                         710               715               720

tca ata aca ttt agg gtt gaa ttt tct tgt gat cta tta tgt tat tcg   2208
Ser Ile Thr Phe Arg Val Glu Phe Ser Cys Asp Leu Leu Cys Tyr Ser
                725               730               735

tcc cat gca tga tcc ata aaa ctt tta ttt ttg aat ttg tct agg aaa   2256
Ser His Ala     Ser Ile Lys Leu Leu Phe Leu Asn Leu Ser Arg Lys
            740               745               750

acc atg agg acg atg gtg agg gtt tgc cac ccg aac taa atc aga taa   2304
Thr Met Arg Thr Met Val Arg Val Cys His Pro Asn     Ile Arg
            755               760               765

aag agc aaa tcg aaa agg aga gat ttc tgc ata tca agg taa gag aca   2352
Lys Ser Lys Ser Lys Arg Arg Asp Phe Cys Ile Ser Arg     Glu Thr
            770               775               780

ttt ggt tgc ttt aat att tta ttc tct tct gta tgt ttt tct gaa aat   2400
Phe Gly Cys Phe Asn Ile Leu Phe Ser Ser Val Cys Phe Ser Glu Asn
785               790               795               800

taa gga gag gag agg act taa tct cat aac tat acg att cca aag aga   2448
    Gly Glu Glu Arg Thr     Ser His Asn Tyr Thr Ile Pro Lys Arg
                805               810               815

tgt taa gat aca tct aat aaa cag tta tac att agt cat aat ctt taa   2496
Cys     Asp Thr Ser Asn Lys Gln Leu Tyr Ile Ser His Asn Leu
            820               825               830

aac taa aaa gag aaa ttt cca aac ttt taa att aaa aac aga att tag   2544
Asn     Lys Glu Lys Phe Pro Asn Phe     Ile Lys Asn Arg Ile
            835               840               845

aaa atg cca gcg aat cga taa cga cat cca gat ctg tcg ggt atc caa   2592
Lys Met Pro Ala Asn Arg     Arg His Pro Asp Leu Ser Gly Ile Gln
    850               855               860

aac tta gaa taa aaa aat aat taa tat att tat aat ata aag ctg gaa   2640
Asn Leu Glu     Lys Asn Asn     Tyr Ile Tyr Asn Ile Lys Leu Glu
865               870               875               880

ctt agg tta taa aat aaa att gaa aat aat agt aga ttt ttt tgt ttt   2688
Leu Arg Leu     Asn Lys Ile Glu Asn Asn Ser Arg Phe Phe Cys Phe
                885               890               895

tgt caa aca aaa tag taa tac aat ttg ttt ttt tta gta caa aga aac   2736
Cys Gln Thr Lys         Tyr Asn Leu Phe Phe Leu Val Gln Arg Asn
            900               905               910

taa ata ggt cca aat tgt ttt ttt ttt aac att cag cca aaa aag cca   2784
    Ile Gly Pro Asn Cys Phe Phe Phe Asn Ile Gln Pro Lys Lys Pro
    915               920               925
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aga ttg atg cat ata tca aga aat cga aat caa aac ttt tgt att caa    2832
Arg Leu Met His Ile Ser Arg Asn Arg Asn Gln Asn Phe Cys Ile Gln
    930                 935                 940


gta ttc tag ttt cac tat ata tag agt cca gtt tct gaa att taa aaa    2880
Val Phe     Phe His Tyr Ile     Ser Pro Val Ser Glu Ile     Lys
945                 950                 955                 960


atc att tac cta tat att act tga tta aca gag aaa att cga gct gag    2928
Ile Ile Tyr Leu Tyr Ile Thr     Leu Thr Glu Lys Ile Arg Ala Glu
                965                 970                 975


ata cat tcc aag tgt ggc tac tca tgc ttc aca cca tca atc gtt tga    2976
Ile His Ser Lys Cys Gly Tyr Ser Cys Phe Thr Pro Ser Ile Val
            980                 985                 990


ctt aaa cca gcc cgc tgc aga gga tga taa tgg agg aga caa caa atc    3024
Leu Lys Pro Ala Arg Cys Arg Gly         Trp Arg Arg Gln Gln Ile
        995                 1000                1005


act ttt gtc gag aat gca aaa ccc act tcg tca ttt cag tgc ctc atc    3072
Thr Phe Val Glu Asn Ala Lys Pro Thr Ser Ser Phe Gln Cys Leu Ile
    1010                1015                1020


tga tta taa ttc tta cga aga tca agg tta tgt tct tga tga gga tca    3120
    Leu     Phe Leu Arg Arg Ser Arg Leu Cys Ser         Gly Ser
1025                1030                1035                1040


aga tta tgc tct tga aga aga tgt acc att att tct tga tga aga tgt    3168
Arg Leu Cys Ser     Arg Arg Cys Thr Ile Ile Ser         Arg Cys
            1045                1050                1055


acc att att acc aag tgt caa gct tcc aat tgt tga gaa gct acc acg    3216
Thr Ile Ile Thr Lys Cys Gln Ala Ser Asn Cys     Glu Ala Thr Thr
            1060                1065                1070


atc cat tac atg ggt ctt cac caa aag gca tgt gtg ttt ttt gtt tcg    3264
Ile His Tyr Met Gly Leu His Gln Lys Ala Cys Val Phe Phe Val Ser
        1075                1080                1085


tac tag ttt caa aat att aat cat ata cta tat agt aat cac tca tag    3312
Tyr     Phe Gln Asn Ile Asn His Ile Leu Tyr Ser Asn His Ser
    1090                1095                1100


tgc ata tat aca ttt ctt taa cat tgc agt agc cag ctg atg gct gaa    3360
Cys Ile Tyr Thr Phe Leu     His Cys Ser Ser Gln Leu Met Ala Glu
1105                1110                1115                1120


agt gat tct gtg att ggt aag aga caa atc tat tat ttg aat ggt gag    3408
Ser Asp Ser Val Ile Gly Lys Arg Gln Ile Tyr Tyr Leu Asn Gly Glu
                1125                1130                1135


gca cta gaa ttg agc agt gaa gaa gat gag gaa gat gaa gaa gaa gat    3456
Ala Leu Glu Leu Ser Ser Glu Glu Asp Glu Glu Asp Glu Glu Glu Asp
                1140                1145                1150
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Glu Glu Glu Ile Lys Lys Glu Lys Cys Glu Phe Ser Glu Asp Val Asp
        1155             1160             1165

cga ttt ata tgg tta gtt ttt gca tta cat atg ttc ttg att att aat   3552
Arg Phe Ile Trp Leu Val Phe Ala Leu His Met Phe Leu Ile Ile Asn
    1170             1175             1180

ttg tag tcc ata ttt aat aaa ctg ctc aag aaa ttt tca gga cgg ttg   3600
Leu     Ser Ile Phe Asn Lys Leu Leu Lys Lys Phe Ser Gly Arg Leu
1185             1190             1195             1200

ggc agg act atg gtt tgg atg atc tgg tcg tgc ggc gtg ctc tcg cca   3648
Gly Arg Thr Met Val Trp Met Ile Trp Ser Cys Gly Val Leu Ser Pro
             1205             1210             1215

agt acc tcg aag tgg atg ttt cgg aca tat tgg taa caa tat tcg aat   3696
Ser Thr Ser Lys Trp Met Phe Arg Thr Tyr Trp     Gln Tyr Ser Asn
            1220             1225             1230

aaa aac ttc ata cgt cga tca ata act ttc ctg ctt att taa ttt ttg   3744
Lys Asn Phe Ile Arg Arg Ser Ile Thr Phe Leu Leu Ile     Phe Leu
        1235             1240             1245

ttg ttt ttc gtc gtg aga aat gtt tta aat ttt caa atc taa tgt agg   3792
Leu Phe Phe Val Val Arg Asn Val Leu Asn Phe Gln Ile     Cys Arg
    1250             1255             1260

aaa gat aca atg aac tca agc tta aga atg atg gaa ctg ctg gtg agg   3840
Lys Asp Thr Met Asn Ser Ser Leu Arg Met Met Glu Leu Leu Val Arg
1265             1270             1275             1280

ctt ctg att tga cat cca aga caa taa cta ctg ctt tcc agg att ttg   3888
Leu Leu Ile     His Pro Arg Gln     Leu Leu Leu Ser Arg Ile Leu
            1285             1290             1295

ctg ata gac gtc att gcc gtc gtt gca tgg taa ctt tga atc ttt ctt   3936
Leu Ile Asp Val Ile Ala Val Val Ala Trp     Leu     Ile Phe Leu
        1300             1305             1310

ttt taa ttt agc cac aaa aaa ggg aga tga tca tac atg ttt tta ttt   3984
Phe     Phe Ser His Lys Lys Gly Arg     Ser Tyr Met Phe Leu Phe
        1315             1320             1325

tat ttt atc att tgt ttt aca gat att cga ttg tca tat gca tga gaa   4032
Tyr Phe Ile Ile Cys Phe Thr Asp Ile Arg Leu Ser Tyr Ala     Glu
    1330             1335             1340

gta tga gcc cga gtc tag atc cgt aag cat taa att cat tta aat tat   4080
Val     Ala Arg Val     Ile Arg Lys His     Ile His Leu Asn Tyr
1345             1350             1355             1360

ttt gtt agt ttc aca acc ctt ata tat aag gtt aag tga tta act taa   4128
Phe Val Ser Phe Thr Thr Leu Ile Tyr Lys Val Lys     Leu Thr
            1365             1370             1375
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tta gat tgc ttt ggc ttg tca gag cga aga caa atc tag ttt gtt tga   4176
Leu Asp Cys Phe Gly Leu Ser Glu Arg Arg Gln Ile     Phe Val
        1380                    1385                1390

gga tga aga tag aca acc atg cag tga gca ttg tta cct caa ggt ctc   4224
Gly     Arg     Thr Thr Met Gln     Ala Leu Leu Pro Gln Gly Leu
    1395                    1400                1405

tat ctc tct ccc tct ctc tct caa ttt ttt tgt cta ttc ctt aat tac   4272
Tyr Leu Ser Pro Ser Leu Ser Gln Phe Phe Cys Leu Phe Leu Asn Tyr
    1410                1415                1420

gtt tat tag tta ctg gtt taa tat taa ata ggt gag gag tgt gac aga   4320
Val Tyr     Leu Leu Val     Tyr     Ile Gly Glu Glu Cys Asp Arg
    1425            1430            1435                    1440

agc tga tca tgt gat gga taa tga taa ctc tat atc aaa caa gat tgt   4368
Ser     Ser Cys Asp Gly         Leu Tyr Ile Lys Gln Asp Cys
            1445                1450                1455

ggt ctc aga tcc aaa caa cac tat gtg gac gcc tgt aga gaa gga tct   4416
Gly Leu Arg Ser Lys Gln His Tyr Val Asp Ala Cys Arg Glu Gly Ser
        1460                1465                1470

tta ctt gaa agg aat tga gat att tgg gag aaa cag gta aaa aaa taa   4464
Leu Leu Glu Arg Asn     Asp Ile Trp Glu Lys Gln Val Lys Lys
        1475            1480                1485

aaa tag att taa tgc att aat ata tat act tac act gta ttc ctt gat   4512
Lys     Ile     Cys Ile Asn Ile Tyr Thr Tyr Thr Val Phe Leu Asp
    1490            1495                1500

tat gct ggt tcg cag ttg tga tgt tgc att aaa cat act tcg ggg gct   4560
Tyr Ala Gly Ser Gln Leu     Cys Cys Ile Lys His Thr Ser Gly Ala
1505                1510            1515                    1520

taa gac gtg cct aga gat tta caa tta cat gcg cga aca aga tca atg   4608
    Asp Val Pro Arg Asp Leu Gln Leu His Ala Arg Thr Arg Ser Met
            1525                1530                1535

tac tat gtc att aga cct taa caa aac tac aca aag aca caa tca ggt   4656
Tyr Tyr Val Ile Arg Pro     Gln Asn Tyr Thr Lys Thr Gln Ser Gly
            1540                1545                1550

aca cta acc tat gtc gta att att ctc atg aca tgt atg tta aaa aca   4704
Thr Leu Thr Tyr Val Val Ile Ile Leu Met Thr Cys Met Leu Lys Thr
        1555                1560                1565

cat gaa gtt tcc tat atg tgt tga tgg ttt tat cac agg tta cca aaa   4752
His Glu Val Ser Tyr Met Cys     Trp Phe Tyr His Arg Leu Pro Lys
    1570                1575                1580

aag tat ctc gaa aaa gta gta ggt cgg tcc gca aaa aat cga gac tcc   4800
Lys Tyr Leu Glu Lys Val Val Gly Arg Ser Ala Lys Asn Arg Asp Ser
    1585                1590                1595                1600
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gaa aat atg ctc gtt atc cgc ctg ctt taa aga aaa caa cta gtg gag   4848
Glu Asn Met Leu Val Ile Arg Leu Leu     Arg Lys Gln Leu Val Glu
            1605                  1610                  1615

aag cta agt ttt ata agc act aca cac cat gca ctt gca agt caa aat   4896
Lys Leu Ser Phe Ile Ser Thr Thr His His Ala Leu Ala Ser Gln Asn
            1620                  1625                  1630

gtg gac agc aat gcc ctt gtt taa ctc acg aaa att gct gcg aga aat   4944
Val Asp Ser Asn Ala Leu Val     Leu Thr Lys Ile Ala Ala Arg Asn
         1635                  1640                  1645

att gcg ggt atg tca ttc aat ttt tcc taa gcc gga aga tcc atg aga   4992
Ile Ala Gly Met Ser Phe Asn Phe Ser     Ala Gly Arg Ser Met Arg
      1650                  1655              1660

ttt aat ttg aac atg agt ttg tat ttt ttg ttc agg tgc tca aag gat   5040
Phe Asn Leu Asn Met Ser Leu Tyr Phe Leu Phe Arg Cys Ser Lys Asp
     1665                  1670                  1675              1680

tgc aac aat cgc ttt gga gga tgt aat tgt gca att ggc caa tgc aca   5088
Cys Asn Asn Arg Phe Gly Gly Cys Asn Cys Ala Ile Gly Gln Cys Thr
               1685                  1690                  1695

aat cga caa tgt cct tgt ttt gct gct aat cgt gaa tgc gat cca gat   5136
Asn Arg Gln Cys Pro Cys Phe Ala Ala Asn Arg Glu Cys Asp Pro Asp
            1700                  1705                  1710

ctt tgt cgg agt tgt cct ctt agg taa cac ttt cac ttc aat atc tct   5184
Leu Cys Arg Ser Cys Pro Leu Arg     His Phe His Phe Asn Ile Ser
            1715                  1720              1725

tta tac aaa ttc tat aat caa agt aat tca aac caa aag tct tat aaa   5232
Leu Tyr Lys Phe Tyr Asn Gln Ser Asn Ser Asn Gln Lys Ser Tyr Lys
     1730                  1735                  1740

aaa aac ttt ata tat agc tgt gga gat ggc act ctt ggt gag aca cca   5280
Lys Asn Phe Ile Tyr Ser Cys Gly Asp Gly Thr Leu Gly Glu Thr Pro
1745                  1750                  1755                  1760

gtg caa atc caa tgc aag aac atg caa ttc ctc ctt caa acc aat aaa   5328
Val Gln Ile Gln Cys Lys Asn Met Gln Phe Leu Leu Gln Thr Asn Lys
               1765                  1770                  1775

aag gta atc aac gtc aaa tcc gta ccg aaa att taa aac taa tta tac   5376
Lys Val Ile Asn Val Lys Ser Val Pro Lys Ile     Asn     Leu Tyr
            1780                  1785              1790

gaa aga cat tta act atc att tcc cgt att tta cta gat tct cat tgg   5424
Glu Arg His Leu Thr Ile Ile Ser Arg Ile Leu Leu Asp Ser His Trp
         1795                  1800                  1805

aaa gtc tga tgt tca tgg atg ggg tgc att tac atg ggt aag caa tca   5472
Lys Val     Cys Ser Trp Met Gly Cys Ile Tyr Met Gly Lys Gln Ser
      1810              1815                  1820
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tgt aaa tat aag aat aag ttt aat agt tat tgg tgc att cat aac act    5520
Cys Lys Tyr Lys Asn Lys Phe Asn Ser Tyr Trp Cys Ile His Asn Thr
1825             1830                 1835                 1840

ttt ttt ttt tta ata atg ttt tat act tta gac cat taa ata tat tgt    5568
Phe Phe Phe Leu Ile Met Phe Tyr Thr Leu Asp His     Ile Tyr Cys
                1845                 1850                 1855

gtg ata tgg ttt gac ccg tca gga ctc tct taa aaa gaa tga gta tct    5616
Val Ile Trp Phe Asp Pro Ser Gly Leu Ser     Lys Glu     Val Ser
            1860                 1865                 1870

cgg aga ata tac tgg aga act gat cac tca tga tga agc taa tga gcg    5664
Arg Arg Ile Tyr Trp Arg Thr Asp His Ser         Ser         Ala
        1875                 1880             1885

tgg gag aat aga aga tcg gat tgg ttc ttc cta cct ctt tac ctt gaa    5712
Trp Glu Asn Arg Arg Ser Asp Trp Phe Phe Leu Pro Leu Tyr Leu Glu
    1890                 1895                 1900

tga tca ggt aac ttc aga ata att ttg aag taa cgt ttt aat cat tcg    5760
    Ser Gly Asn Phe Arg Ile Ile Leu Lys     Arg Phe Asn His Ser
1905                 1910                 1915                 1920

cgg gtt aca cat cta ttc gaa tca aag taa cat tta ttt tac agc tcg    5808
Arg Val Thr His Leu Phe Glu Ser Lys     His Leu Phe Tyr Ser Ser
                1925                 1930                 1935

aaa tcg atg ctc gcc gta aag gaa acg agt tca aat ttc tca atc act    5856
Lys Ser Met Leu Ala Val Lys Glu Thr Ser Ser Asn Phe Ser Ile Thr
            1940                 1945                 1950

cag caa gac cta act gct acg cca agg tac taa gcc gtt ata ctt tat    5904
Gln Gln Asp Leu Thr Ala Thr Pro Arg Tyr     Ala Val Ile Leu Tyr
        1955                 1960                 1965

ctt gaa caa ata cta aca tta tac aaa caa aaa tac tta tgt tag ttt    5952
Leu Glu Gln Ile Leu Thr Leu Tyr Lys Gln Lys Tyr Leu Cys     Phe
    1970                 1975                 1980

ctt tag tta aat cgt gta tca act tta ctc gtc gtt gat tgg ttt tca    6000
Leu     Leu Asn Arg Val Ser Thr Leu Leu Val Val Asp Trp Phe Ser
1985             1990                 1995                 2000

tat tga aga tat tcc aag aaa ctc aaa ctc att tta aat gat ttt ttc    6048
Tyr     Arg Tyr Ser Lys Lys Leu Lys Leu Ile Leu Asn Asp Phe Phe
            2005                 2010                 2015

ttg tcg aga aaa ttt agg tta cga aaa ttt atg gtt tcg tgt gca gtt    6096
Leu Ser Arg Lys Phe Arg Leu Arg Lys Phe Met Val Ser Cys Ala Val
            2020                 2025                 2030

gat gat tgt gag agg aga tca gag gat tgg tct att tgc gga gag agc    6144
Asp Asp Cys Glu Arg Arg Ser Glu Asp Trp Ser Ile Cys Gly Glu Ser
        2035                 2040                 2045
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aat cga aga agg tga gga gct ttt ctt cga cta ctg cta tgg acc aga    6192
Asn Arg Arg Arg     Gly Ala Phe Leu Arg Leu Leu Leu Trp Thr Arg
    2050            2055            2060


aca tgc gga ttg gtc gcg tgg tcg aga acc tag aaa gac tgg tgc ttc    6240
Thr Cys Gly Leu Val Ala Trp Ser Arg Thr     Lys Asp Trp Cys Phe
2065            2070            2075            2080


taa aag gtc taa gga agc ccg tcc agc tcg tta gtt ttt gat ctg agg    6288
    Lys Val     Gly Ser Pro Ser Ser Ser Leu Val Phe Asp Leu Arg
            2085            2090            2095


aga agc agc aat tca agc agt cct ttt ttt atg tta tgg tat atc aat    6336
Arg Ser Ser Asn Ser Ser Ser Pro Phe Phe Met Leu Trp Tyr Ile Asn
            2100            2105            2110


taa taa tgt aat gct att ttg tgt tac taa acc aaa act taa gtt tct    6384
        Cys Asn Ala Ile Leu Cys Tyr     Thr Lys Thr     Val Ser
        2115            2120            2125


gtt tta ttt gtt tta ggg tgt ttt gtt tgt atc ata tgt gtc tta act    6432
Val Leu Phe Val Leu Gly Cys Phe Val Cys Ile Ile Cys Val Leu Thr
    2130            2135            2140


ttc aaa gtt ttc ttt ttg tat ttc aat tta aaa aca atg ttt atg ttg    6480
Phe Lys Val Phe Phe Leu Tyr Phe Asn Leu Lys Thr Met Phe Met Leu
2145            2150            2155            2160


tta gtt tgc ata gac ctt tgg aaa aaa aaa gct ttg cac aac ttt aca    6528
Leu Val Cys Ile Asp Leu Trp Lys Lys Lys Ala Leu His Asn Phe Thr
            2165            2170            2175


ttt att tag tct tca ttt agc gaa aaa tca cat aac aca agt ctg tgg    6576
Phe Ile     Ser Ser Phe Ser Glu Lys Ser His Asn Thr Ser Leu Trp
        2180            2185            2190


tac gta atg tac aaa aat gtc aaa ata atg ggt ttt atc att aaa aaa    6624
Tyr Val Met Tyr Lys Asn Val Lys Ile Met Gly Phe Ile Ile Lys Lys
        2195            2200            2205


aaa tat tgg tta tga atg aag tat agt tag aat ttt agg tat tag ctc    6672
Lys Tyr Trp Leu     Met Lys Tyr Ser     Asn Phe Arg Tyr     Leu
    2210            2215            2220


gtt tgg ttt taa aac gtt ttt cga gat tta att ttg tag tct att gag    6720
Val Trp Phe     Asn Val Phe Arg Asp Leu Ile Leu     Ser Ile Glu
2225            2230            2235            2240


taa tac atg gaa gaa tca tca aca aag tgg ctg tag ctt acg aaa ggt    6768
    Tyr Met Glu Glu Ser Ser Thr Lys Trp Leu     Leu Thr Lys Gly
            2245            2250            2255


ttt act tta atg taa ata tgt att tga tgc atc taa cat tta gta tct    6816
Phe Thr Leu Met     Ile Cys Ile     Cys Ile     His Leu Val Ser
            2260            2265            2270
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25

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aaa caa ata aaa aca aaa aaa aag aaa aaa gct ctt taa aat ccg aaa    6864
Lys Gln Ile Lys Thr Lys Lys Lys Lys Lys Ala Leu     Asn Pro Lys
        2275              2280              2285

gta act att ttc aaa aaa tct aaa tta taa act taa atg ttt gga atc    6912
Val Thr Ile Phe Lys Lys Ser Lys Leu     Thr     Met Phe Gly Ile
        2290              2295              2300

gcg aac gac tat tgc taa ata taa atg cta aat ata cat gaa gat gtg    6960
Ala Asn Asp Tyr Cys     Ile     Met Leu Asn Ile His Glu Asp Val
2305              2310              2315              2320

aaa aac atg ttg gat ttg tgg aat cgt taa tga cca cgg tta aat ggc    7008
Lys Asn Met Leu Asp Leu Trp Asn Arg     Pro Arg Leu Asn Gly
              2325              2330              2335

                                                                   7015
ggg atc c
Gly Ile
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<210> 7
<211> 34
<212> PRT
<213> Arabidopsis sp.

<400> 7
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Gly Ser Ile Ile Phe Lys Asn Gln Ile Phe Ser Tyr Leu Leu Phe Val
 1              5               10              15

Ser Lys Lys Lys Lys Thr His Asp Asp Tyr Pro Ser Ala Gly Cys Val
           20              25              30

His Arg
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<210> 8
<211> 12
<212> PRT
<213> Arabidopsis sp.

<400> 8
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Thr Tyr Ile Leu Lys Leu Val Gly Phe Ser Leu Pro
 1              5               10
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<210> 9
<211> 18
<212> PRT
<213> Arabidopsis sp.

<400> 9
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Val Trp Thr Cys Phe Tyr Asn Leu Met Tyr Ser Val Asp Gln Lys Ile
 1              5               10              15

Glu Lys
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<210> 10
<211> 6
<212> PRT
<213> Arabidopsis sp.

<400> 10
Glu Arg Glu Pro Leu Trp
  1   5

<210> 11
<211> 20
<212> PRT
<213> Arabidopsis sp.

<400> 11
Gln Asn Arg Asn His Tyr Ile Glu Ser Phe Glu Lys Thr Lys Arg Ser
  1   5   10   15

Asn Leu Cys Ser
              20

<210> 12
<211> 15
<212> PRT
<213> Arabidopsis sp.

<400> 12
Met Thr Ile Asp Val Ala Ala Asn Tyr Ser Leu Asn Ala Phe Ile
  1   5   10   15

<210> 13
<211> 307
<212> PRT
<213> Arabidopsis sp.

<400> 13
Ile Phe Leu Thr Ser Ser Val Pro Ser His Ser Arg Asn Ser Ile Ile
  1   5   10   15

Pro Phe Ser Phe Phe Phe Ser Val Phe Gln Ser Leu Arg Ile Lys Met
              20   25   30

Glu His Glu Glu Thr Gln Lys Asn Thr Arg Asn Ser Trp Ser Leu Ile
             35   40   45

Arg Pro Phe Gln Met Ile Ser Ile Ser Phe Leu Ser Leu Leu Leu Pro
     50   55   60

Leu Ser Phe Leu Phe Leu Ser Arg Leu Ser Leu Tyr Thr Ser Ser Thr
 65   70   75   80

Pro Val Thr Val Ser Gly Val Ser Ser Val Ile His Gln Ala Asp Val
                    85   90   95

Gly Val Leu Tyr Thr Ile Leu Phe Leu Ile Ile Val Phe Thr Leu Ile
        100   105   110

His Ser Leu Ser Gly Lys Pro Glu Cys Ser Val Leu His Ser His Leu
        115   120   125

Tyr Ile Cys Trp Ile Val Leu Phe Ile Ala Gln Ala Cys Ala Phe Gly
    130   135   140

Ile Lys Arg Thr Met Ser Thr Thr Met Ser Ile Asn Pro Asp Lys Asn
145   150   155   160

Leu Phe Leu Ala Thr His Glu Arg Trp Met Leu Val Arg Val Leu Phe
            165   170   175

Phe Leu Gly Leu His Glu Val Met Leu Met Trp Phe Arg Val Val Val
        180   185   190

Lys Pro Val Val Asp Asn Thr Ile Tyr Gly Val Tyr Val Glu Glu Arg
        195   200   205

Trp Ser Glu Arg Ala Val Val Ala Val Thr Phe Gly Ile Met Trp Trp
    210   215   220

Trp Arg Leu Arg Asp Glu Val Glu Ser Leu Val Val Val Val Thr Ala
225   230   235   240

Asp Arg Leu Asn Leu Pro Ile Arg Leu Glu Gly Leu Asn Phe Val Asn
            245   250   255

Trp Cys Met Tyr Tyr Ile Cys Val Gly Ile Gly Leu Met Lys Ile Phe
            260   265   270

Lys Gly Phe Leu Asp Phe Val Asn Thr Leu Thr Leu Ser Ile Lys Arg
        275   280   285

Ser Arg Lys Gly Cys Glu Ser Cys Val Phe Asp Asp Met Cys Asn Asp
        290   295   300

Asp His Val
305

<210> 14
<211> 6
<212> PRT
<213> Arabidopsis sp.

<400> 14
His Ile Ile Leu Ile Ser
  1   5

<210> 15
<211> 42
<212> PRT
<213> Arabidopsis sp.

<400> 15
Met Phe Leu Arg Phe Phe Tyr Phe Tyr Phe Leu Phe Leu Ala Arg Asn
1   5   10   15

Leu Thr Arg Ile Tyr Val Thr Lys Ile Val Glu Tyr Gln Lys Ala Lys
            20   25   30

Ile Phe Tyr Leu Lys Ile Thr Ile Glu His
        35   40

<210> 16
<211> 14
<212> PRT
<213> Arabidopsis sp.

<400> 16
Phe Lys Ser Phe Tyr Asn Tyr Ile Phe Ile Thr His Pro Phe
1   5   10

<210> 17
<211> 26
<212> PRT
<213> Arabidopsis sp.

<400> 17
Glu Lys Leu Gly Asp Leu Ile Asn Val Ile Asn Ser Lys Lys Tyr Arg
1   5   10   15

Ile Tyr Val Glu Val Leu Asn Ala Tyr Asn
            20   25

<210> 18
<211> 15
<212> PRT
<213> Arabidopsis sp.

<400> 18
Ile Tyr Glu Leu Asn Asn Ile Ala Ile Tyr Ile Phe Leu Lys Ile
1   5   10   15

<210> 19
<211> 9
<212> PRT
<213> Arabidopsis sp.

<400> 19
Thr His Phe Val Ser Ser Ile Tyr Ala
1   5

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<210> 20
<211> 13
<212> PRT
<213> Arabidopsis sp.

<400> 20
Tyr Ile Ser Leu Asn Arg Lys Leu Ala Arg Asn Glu Tyr
  1               5                  10


<210> 21
<211> 31
<212> PRT
<213> Arabidopsis sp.

<400> 21
Tyr Lys Ser Tyr Arg Thr Leu Gln Asn Val Tyr Ile Asp Leu Ser Thr
  1               5                  10                  15

Phe Phe His Trp Phe Thr Lys Pro Ser Cys His Ile Asn Met Ser
             20                  25                  30


<210> 22
<211> 31
<212> PRT
<213> Arabidopsis sp.

<400> 22
Arg Leu Phe Phe Tyr Asn Ile Val Tyr Glu Phe Lys Leu Glu Leu Ser
  1               5                  10                  15

Asn Val Lys Gln Thr Gln His Leu His Thr Tyr Ser Thr Ile Phe
             20                  25                  30


<210> 23
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<212> PRT
<213> Arabidopsis sp.

<400> 23
Lys Leu Lys Phe Ser
  1               5


<210> 24
<211> 23
<212> PRT
<213> Arabidopsis sp.

<400> 24
Ile Ser His Ile Ile Phe Leu Leu Lys Gln Ala Ser Pro Asn Thr Phe
  1               5                  10                  15

Leu Pro Asp Tyr Asn Phe Pro
             20
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<210> 25
<211> 34
<212> PRT
<213> Arabidopsis sp.

<400> 25
Gly Phe Leu Gln Lys Lys Ile Asn Phe Leu Phe Lys Lys Pro Phe Ala
1   5   10   15

Leu Ser Phe Ser Pro Thr Ser Glu Lys Thr Arg Lys Lys Glu Glu Ala
            20   25   30

Ser Gly

<210> 26
<211> 12
<212> PRT
<213> Arabidopsis sp.

<400> 26
Trp Arg Arg Leu Val Ser Leu Gln Thr Tyr Met Asn
1   5   10

<210> 27
<211> 8
<212> PRT
<213> Arabidopsis sp.

<400> 27
Leu Gly Tyr Glu Ile His Ile Phe
1   5

<210> 28
<211> 25
<212> PRT
<213> Arabidopsis sp.

<400> 28
Leu Cys Val Tyr Asp Arg Ser Ile Thr Phe Arg Val Glu Phe Ser Cys
1   5   10   15

Asp Leu Leu Cys Tyr Ser Ser His Ala
            20   25

<210> 29
<211> 24
<212> PRT
<213> Arabidopsis sp.

<400> 29
Ser Ile Lys Leu Leu Phe Leu Asn Leu Ser Arg Lys Thr Met Arg Thr
1   5   10   15

Met Val Arg Val Cys His Pro Asn
                20

<210> 30
<211> 13
<212> PRT
<213> Arabidopsis sp.

<400> 30
Lys Ser Lys Ser Lys Arg Arg Asp Phe Cys Ile Ser Arg
  1   5   10

<210> 31
<211> 18
<212> PRT
<213> Arabidopsis sp.

<400> 31
Glu Thr Phe Gly Cys Phe Asn Ile Leu Phe Ser Ser Val Cys Phe Ser
  1   5   10   15

Glu Asn

<210> 32
<211> 5
<212> PRT
<213> Arabidopsis sp.

<400> 32
Gly Glu Glu Arg Thr
  1   5

<210> 33
<211> 10
<212> PRT
<213> Arabidopsis sp.

<400> 33
Ser His Asn Tyr Thr Ile Pro Lys Arg Cys
  1   5   10

<210> 34
<211> 13
<212> PRT
<213> Arabidopsis sp.

<400> 34
Asp Thr Ser Asn Lys Gln Leu Tyr Ile Ser His Asn Leu
  1   5   10

<210> 35
<211> 7
<212> PRT
<213> Arabidopsis sp.

<400> 35
Lys Glu Lys Phe Pro Asn Phe
 1   5

<210> 36
<211> 5
<212> PRT
<213> Arabidopsis sp.

<400> 36
Ile Lys Asn Arg Ile
 1   5

<210> 37
<211> 6
<212> PRT
<213> Arabidopsis sp.

<400> 37
Lys Met Pro Ala Asn Arg
 1   5

<210> 38
<211> 12
<212> PRT
<213> Arabidopsis sp.

<400> 38
Arg His Pro Asp Leu Ser Gly Ile Gln Asn Leu Glu
 1   5   10

<210> 39
<211> 11
<212> PRT
<213> Arabidopsis sp.

<400> 39
Tyr Ile Tyr Asn Ile Lys Leu Glu Leu Arg Leu
 1   5   10

<210> 40
<211> 16
<212> PRT
<213> Arabidopsis sp.

<400> 40
Asn Lys Ile Glu Asn Asn Ser Arg Phe Phe Cys Phe Cys Gln Thr Lys
  1   5   10   15

<210> 41
<211> 10
<212> PRT
<213> Arabidopsis sp.

<400> 41
Tyr Asn Leu Phe Phe Leu Val Gln Arg Asn
  1   5   10

<210> 42
<211> 33
<212> PRT
<213> Arabidopsis sp.

<400> 42
Ile Gly Pro Asn Cys Phe Phe Phe Asn Ile Gln Pro Lys Lys Pro Arg
  1   5   10   15

Leu Met His Ile Ser Arg Asn Arg Asn Gln Asn Phe Cys Ile Gln Val
              20   25   30

Phe

<210> 43
<211> 4
<212> PRT
<213> Arabidopsis sp.

<400> 43
Phe His Tyr Ile
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<210> 44
<211> 6
<212> PRT
<213> Arabidopsis sp.

<400> 44
Ser Pro Val Ser Glu Ile
  1   5

<210> 45
<211> 8
<212> PRT
<213> Arabidopsis sp.

<400> 45
Lys Ile Ile Tyr Leu Tyr Ile Thr
  1   5

<210> 46
<211> 23
<212> PRT
<213> Arabidopsis sp.

<400> 46
Leu Thr Glu Lys Ile Arg Ala Glu Ile His Ser Lys Cys Gly Tyr Ser
  1   5   10   15

Cys Phe Thr Pro Ser Ile Val
              20

<210> 47
<211> 8
<212> PRT
<213> Arabidopsis sp.

<400> 47
Leu Lys Pro Ala Arg Cys Arg Gly
  1   5

<210> 48
<211> 22
<212> PRT
<213> Arabidopsis sp.

<400> 48
Trp Arg Arg Gln Gln Ile Thr Phe Val Glu Asn Ala Lys Pro Thr Ser
  1   5   10   15

Ser Phe Gln Cys Leu Ile
              20

<210> 49
<211> 9
<212> PRT
<213> Arabidopsis sp.

<400> 49
Phe Leu Arg Arg Ser Arg Leu Cys Ser
  1   5

<210> 50
<211> 6
<212> PRT
<213> Arabidopsis sp.

<400> 50
Gly Ser Arg Leu Cys Ser
 1   5

<210> 51
<211> 7
<212> PRT
<213> Arabidopsis sp.

<400> 51
Arg Arg Cys Thr Ile Ile Ser
 1   5

<210> 52
<211> 13
<212> PRT
<213> Arabidopsis sp.

<400> 52
Arg Cys Thr Ile Ile Thr Lys Cys Gln Ala Ser Asn Cys
 1   5   10

<210> 53
<211> 21
<212> PRT
<213> Arabidopsis sp.

<400> 53
Glu Ala Thr Thr Ile His Tyr Met Gly Leu His Gln Lys Ala Cys Val
 1   5   10   15

Phe Phe Val Ser Tyr
                20

<210> 54
<211> 13
<212> PRT
<213> Arabidopsis sp.

<400> 54
Phe Gln Asn Ile Asn His Ile Leu Tyr Ser Asn His Ser
 1   5   10

<210> 55
<211> 6
<212> PRT
<213> Arabidopsis sp.

<400> 55
Cys Ile Tyr Thr Phe Leu
 1   5

<210> 56
<211> 74
<212> PRT
<213> Arabidopsis sp.

<400> 56
His Cys Ser Ser Gln Leu Met Ala Glu Ser Asp Ser Val Ile Gly Lys
1   5   10   15

Arg Gln Ile Tyr Tyr Leu Asn Gly Glu Ala Leu Glu Leu Ser Ser Glu
                20   25   30

Glu Asp Glu Glu Asp Glu Glu Glu Asp Glu Glu Glu Ile Lys Lys Glu
            35   40   45

Lys Cys Glu Phe Ser Glu Asp Val Asp Arg Phe Ile Trp Leu Val Phe
        50   55   60

Ala Leu His Met Phe Leu Ile Ile Asn Leu
    65   70

<210> 57
<211> 41
<212> PRT
<213> Arabidopsis sp.

<400> 57
Ser Ile Phe Asn Lys Leu Leu Lys Lys Phe Ser Gly Arg Leu Gly Arg
1   5   10   15

Thr Met Val Trp Met Ile Trp Ser Cys Gly Val Leu Ser Pro Ser Thr
                20   25   30

Ser Lys Trp Met Phe Arg Thr Tyr Trp
            35   40

<210> 58
<211> 17
<212> PRT
<213> Arabidopsis sp.

<400> 58
Gln Tyr Ser Asn Lys Asn Phe Ile Arg Arg Ser Ile Thr Phe Leu Leu
1   5   10   15

Ile

<210> 59
<211> 15
<212> PRT
<213> Arabidopsis sp.

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<400> 59
Phe Leu Leu Phe Phe Val Val Arg Asn Val Leu Asn Phe Gln Ile
  1               5                  10                  15


<210> 60
<211> 21
<212> PRT
<213> Arabidopsis sp.

<400> 60
Cys Arg Lys Asp Thr Met Asn Ser Ser Leu Arg Met Met Glu Leu Leu
  1               5                  10                  15

Val Arg Leu Leu Ile
                20


<210> 61
<211> 4
<212> PRT
<213> Arabidopsis sp.

<400> 61
His Pro Arg Gln
  1


<210> 62
<211> 17
<212> PRT
<213> Arabidopsis sp.

<400> 62
Leu Leu Leu Ser Arg Ile Leu Leu Ile Asp Val Ile Ala Val Val Ala
  1               5                  10                  15

Trp


<210> 63
<211> 4
<212> PRT
<213> Arabidopsis sp.

<400> 63
Ile Phe Leu Phe
  1


<210> 64
<211> 7
<212> PRT
<213> Arabidopsis sp.
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<400> 64
Phe Ser His Lys Lys Gly Arg
1   5

<210> 65
<211> 20
<212> PRT
<213> Arabidopsis sp.

<400> 65
Ser Tyr Met Phe Leu Phe Tyr Phe Ile Ile Cys Phe Thr Asp Ile Arg
1   5   10   15

Leu Ser Tyr Ala
            20

<210> 66
<211> 4
<212> PRT
<213> Arabidopsis sp.

<400> 66
Ile Arg Lys His
1

<210> 67
<211> 17
<212> PRT
<213> Arabidopsis sp.

<400> 67
Ile His Leu Asn Tyr Phe Val Ser Phe Thr Thr Leu Ile Tyr Lys Val
1   5   10   15

Lys

<210> 68
<211> 12
<212> PRT
<213> Arabidopsis sp.

<400> 68
Leu Asp Cys Phe Gly Leu Ser Glu Arg Arg Gln Ile
1   5   10

<210> 69
<211> 4
<212> PRT
<213> Arabidopsis sp.

<400> 69
Thr Thr Met Gln
   1

<210> 70
<211> 25
<212> PRT
<213> Arabidopsis sp.

<400> 70
Ala Leu Leu Pro Gln Gly Leu Tyr Leu Ser Pro Ser Leu Ser Gln Phe
   1   5   10   15

Phe Cys Leu Phe Leu Asn Tyr Val Tyr
            20   25

<210> 71
<211> 8
<212> PRT
<213> Arabidopsis sp.

<400> 71
Ile Gly Glu Glu Cys Asp Arg Ser
   1   5

<210> 72
<211> 4
<212> PRT
<213> Arabidopsis sp.

<400> 72
Ser Cys Asp Gly
   1

<210> 73
<211> 28
<212> PRT
<213> Arabidopsis sp.

<400> 73
Leu Tyr Ile Lys Gln Asp Cys Gly Leu Arg Ser Lys Gln His Tyr Val
   1   5   10   15

Asp Ala Cys Arg Glu Gly Ser Leu Leu Glu Arg Asn
            20   25

<210> 74
<211> 9
<212> PRT
<213> Arabidopsis sp.

<400> 74
Asp Ile Trp Glu Lys Gln Val Lys Lys
 1   5

<210> 75
<211> 18
<212> PRT
<213> Arabidopsis sp.

<400> 75
Cys Ile Asn Ile Tyr Thr Tyr Thr Val Phe Leu Asp Tyr Ala Gly Ser
 1   5   10   15

Gln Leu

<210> 76
<211> 9
<212> PRT
<213> Arabidopsis sp.

<400> 76
Cys Cys Ile Lys His Thr Ser Gly Ala
 1   5

<210> 77
<211> 21
<212> PRT
<213> Arabidopsis sp.

<400> 77
Asp Val Pro Arg Asp Leu Gln Leu His Ala Arg Thr Arg Ser Met Tyr
 1   5   10   15

Tyr Val Ile Arg Pro
             20

<210> 78
<211> 32
<212> PRT
<213> Arabidopsis sp.

<400> 78
Gln Asn Tyr Thr Lys Thr Gln Ser Gly Thr Leu Thr Tyr Val Val Ile
 1   5   10   15

Ile Leu Met Thr Cys Met Leu Lys Thr His Glu Val Ser Tyr Met Cys
             20   25   30

<210> 79
<211> 33
<212> PRT
<213> Arabidopsis sp.

<400> 79
Trp Phe Tyr His Arg Leu Pro Lys Lys Tyr Leu Glu Lys Val Val Gly
 1   5   10   15

Arg Ser Ala Lys Asn Arg Asp Ser Glu Asn Met Leu Val Ile Arg Leu
                20   25   30

Leu

<210> 80
<211> 29
<212> PRT
<213> Arabidopsis sp.

<400> 80
Arg Lys Gln Leu Val Glu Lys Leu Ser Phe Ile Ser Thr Thr His His
 1   5   10   15

Ala Leu Ala Ser Gln Asn Val Asp Ser Asn Ala Leu Val
                20   25

<210> 81
<211> 17
<212> PRT
<213> Arabidopsis sp.

<400> 81
Leu Thr Lys Ile Ala Ala Arg Asn Ile Ala Gly Met Ser Phe Asn Phe
 1   5   10   15

Ser

<210> 82
<211> 62
<212> PRT
<213> Arabidopsis sp.

<400> 82
Ala Gly Arg Ser Met Arg Phe Asn Leu Asn Met Ser Leu Tyr Phe Leu
 1   5   10   15

Phe Arg Cys Ser Lys Asp Cys Asn Asn Arg Phe Gly Gly Cys Asn Cys
                20   25   30

Ala Ile Gly Gln Cys Thr Asn Arg Gln Cys Pro Cys Phe Ala Ala Asn
                35   40   45

Arg Glu Cys Asp Pro Asp Leu Cys Arg Ser Cys Pro Leu Arg
        50   55   60

<210> 83
<211> 66
<212> PRT
<213> Arabidopsis sp.

<400> 83
His Phe His Phe Asn Ile Ser Leu Tyr Lys Phe Tyr Asn Gln Ser Asn
1   5   10   15

Ser Asn Gln Lys Ser Tyr Lys Lys Asn Phe Ile Tyr Ser Cys Gly Asp
            20   25   30

Gly Thr Leu Gly Glu Thr Pro Val Gln Ile Gln Cys Lys Asn Met Gln
        35   40   45

Phe Leu Leu Gln Thr Asn Lys Lys Val Ile Asn Val Lys Ser Val Pro
    50   55   60

Lys Ile
    65

<210> 84
<211> 20
<212> PRT
<213> Arabidopsis sp.

<400> 84
Leu Tyr Glu Arg His Leu Thr Ile Ile Ser Arg Ile Leu Leu Asp Ser
1   5   10   15

His Trp Lys Val
            20

<210> 85
<211> 41
<212> PRT
<213> Arabidopsis sp.

<400> 85
Cys Ser Trp Met Gly Cys Ile Tyr Met Gly Lys Gln Ser Cys Lys Tyr
1   5   10   15

Lys Asn Lys Phe Asn Ser Tyr Trp Cys Ile His Asn Thr Phe Phe Phe
            20   25   30

Leu Ile Met Phe Tyr Thr Leu Asp His
        35   40

<210> 86
<211> 13
<212> PRT
<213> Arabidopsis sp.

<400> 86
Ile Tyr Cys Val Ile Trp Phe Asp Pro Ser Gly Leu Ser
 1   5   10

<210> 87
<211> 12
<212> PRT
<213> Arabidopsis sp.

<400> 87
Val Ser Arg Arg Ile Tyr Trp Arg Thr Asp His Ser
 1   5   10

<210> 88
<211> 17
<212> PRT
<213> Arabidopsis sp.

<400> 88
Ala Trp Glu Asn Arg Arg Ser Asp Trp Phe Phe Leu Pro Leu Tyr Leu
 1   5   10   15

Glu

<210> 89
<211> 9
<212> PRT
<213> Arabidopsis sp.

<400> 89
Ser Gly Asn Phe Arg Ile Ile Leu Lys
 1   5

<210> 90
<211> 14
<212> PRT
<213> Arabidopsis sp.

<400> 90
Arg Phe Asn His Ser Arg Val Thr His Leu Phe Glu Ser Lys
 1   5   10

<210> 91
<211> 32
<212> PRT
<213> Arabidopsis sp.

<400> 91
His Leu Phe Tyr Ser Ser Lys Ser Met Leu Ala Val Lys Glu Thr Ser
 1   5   10   15

Ser Asn Phe Ser Ile Thr Gln Gln Asp Leu Thr Ala Thr Pro Arg Tyr
            20   25   30

<210> 92
<211> 19
<212> PRT
<213> Arabidopsis sp.

<400> 92
Ala Val Ile Leu Tyr Leu Glu Gln Ile Leu Thr Leu Tyr Lys Gln Lys
  1   5   10   15

Tyr Leu Cys

<210> 93
<211> 15
<212> PRT
<213> Arabidopsis sp.

<400> 93
Leu Asn Arg Val Ser Thr Leu Leu Val Val Asp Trp Phe Ser Tyr
  1   5   10   15

<210> 94
<211> 50
<212> PRT
<213> Arabidopsis sp.

<400> 94
Arg Tyr Ser Lys Lys Leu Lys Leu Ile Leu Asn Asp Phe Phe Leu Ser
  1   5   10   15

Arg Lys Phe Arg Leu Arg Lys Phe Met Val Ser Cys Ala Val Asp Asp
            20   25   30

Cys Glu Arg Arg Ser Glu Asp Trp Ser Ile Cys Gly Glu Ser Asn Arg
            35   40   45

Arg Arg
      50

<210> 95
<211> 21
<212> PRT
<213> Arabidopsis sp.

<400> 95
Gly Ala Phe Leu Arg Leu Leu Leu Trp Thr Arg Thr Cys Gly Leu Val
  1   5   10   15

Ala Trp Ser Arg Thr
            20

<210> 96
<211> 5
<212> PRT
<213> Arabidopsis sp.

<400> 96
Lys Asp Trp Cys Phe
 1   5

<210> 97
<211> 28
<212> PRT
<213> Arabidopsis sp.

<400> 97
Gly Ser Pro Ser Ser Ser Leu Val Phe Asp Leu Arg Arg Ser Ser Asn
 1   5   10   15

Ser Ser Ser Pro Phe Phe Met Leu Trp Tyr Ile Asn
            20   25

<210> 98
<211> 7
<212> PRT
<213> Arabidopsis sp.

<400> 98
Cys Asn Ala Ile Leu Cys Tyr
 1   5

<210> 99
<211> 52
<212> PRT
<213> Arabidopsis sp.

<400> 99
Val Ser Val Leu Phe Val Leu Gly Cys Phe Val Cys Ile Ile Cys Val
 1   5   10   15

Leu Thr Phe Lys Val Phe Phe Leu Tyr Phe Asn Leu Lys Thr Met Phe
            20   25   30

Met Leu Leu Val Cys Ile Asp Leu Trp Lys Lys Lys Ala Leu His Asn
            35   40   45

Phe Thr Phe Ile
        50

<210> 100
<211> 33
<212> PRT
<213> Arabidopsis sp.

<400> 100
Ser Ser Phe Ser Glu Lys Ser His Asn Thr Ser Leu Trp Tyr Val Met
　1　　　　　　　　5　　　　　　　　　10　　　　　　　　　15

Tyr Lys Asn Val Lys Ile Met Gly Phe Ile Ile Lys Lys Lys Tyr Trp
　　　　　　20　　　　　　　　　25　　　　　　　　　30

Leu

<210> 101
<211> 4
<212> PRT
<213> Arabidopsis sp.

<400> 101
Met Lys Tyr Ser
　1

<210> 102
<211> 4
<212> PRT
<213> Arabidopsis sp.

<400> 102
Asn Phe Arg Tyr
　1

<210> 103
<211> 4
<212> PRT
<213> Arabidopsis sp.

<400> 103
Leu Val Trp Phe
　1

<210> 104
<211> 8
<212> PRT
<213> Arabidopsis sp.

<400> 104
Asn Val Phe Arg Asp Leu Ile Leu
　1　　　　　　　　5

<210> 105
<211> 10
<212> PRT
<213> Arabidopsis sp.

<400> 105
Tyr Met Glu Glu Ser Ser Thr Lys Trp Leu
  1   5   10

<210> 106
<211> 8
<212> PRT
<213> Arabidopsis sp.

<400> 106
Leu Thr Lys Gly Phe Thr Leu Met
  1   5

<210> 107
<211> 16
<212> PRT
<213> Arabidopsis sp.

<400> 107
His Leu Val Ser Lys Gln Ile Lys Thr Lys Lys Lys Lys Ala Leu
  1   5   10   15

<210> 108
<211> 12
<212> PRT
<213> Arabidopsis sp.

<400> 108
Asn Pro Lys Val Thr Ile Phe Lys Lys Ser Lys Leu
  1   5   10

<210> 109
<211> 9
<212> PRT
<213> Arabidopsis sp.

<400> 109
Met Phe Gly Ile Ala Asn Asp Tyr Cys
  1   5

<210> 110
<211> 17
<212> PRT
<213> Arabidopsis sp.

<400> 110
Met Leu Asn Ile His Glu Asp Val Lys Asn Met Leu Asp Leu Trp Asn
  1   5   10   15

Arg

<400> 115
Thr Trp Leu Pro Ile Thr Val Leu Met Leu Leu Tyr Arg Ser Phe Leu
 1   5   10   15

His Pro Leu Phe Leu His Ile Gln Glu Thr Val Ser Ser His Phe Leu
            20   25   30

Ser Ser Ser Gln Cys Phe Asn Leu Cys Glu Leu Arg Trp Asn Met Lys
        35   40   45

Lys His Lys Arg Thr Gln Glu Thr Ala Gly Pro
    50   55

<210> 116
<211> 5
<212> PRT
<213> Arabidopsis sp.

<400> 116
Phe Asp His Phe Lys
 1   5

<210> 117
<211> 57
<212> PRT
<213> Arabidopsis sp.

<400> 117
Ser Pro Leu Ala Phe Leu Ala Ser Ser Ser Leu Tyr Leu Ser Ser Phe
 1   5   10   15

Phe His Val Ser Leu Ser Ile Pro Pro Gln Leu Arg Ser Pro Ser Pro
            20   25   30

Ala Phe Pro Leu Leu Phe Thr Arg Gln Met Ser Glu Ser Tyr Thr Arg
            35   40   45

Ser Cys Phe Ser Ser Ser Ser Ser Leu
    50   55

<210> 118
<211> 37
<212> PRT
<213> Arabidopsis sp.

<400> 118
Ser Thr Val Ser Gln Glu Asn Gln Asn Ala Leu Phe Ser Ile Pro Ile
 1   5   10   15

Ser Thr Ser Ala Gly Ser Phe Ser Ser Ser Pro Lys Leu Val Pro Leu
            20   25   30

Gly Ser Lys Glu Pro
        35

<210> 119
<211> 5
<212> PRT
<213> Arabidopsis sp.

<400> 119
Ala Arg Pro Cys Leu
 1   5

<210> 120
<211> 27
<212> PRT
<213> Arabidopsis sp.

<400> 120
Ile Gln Thr Lys Thr Cys Phe Leu Arg His Met Lys Asp Gly Cys Trp
 1   5   10   15

Leu Gly Phe Cys Ser Phe Trp Gly Tyr Thr Lys
             20   25

<210> 121
<211> 31
<212> PRT
<213> Arabidopsis sp.

<400> 121
Cys Gly Leu Glu Ser Trp Leu Ser Leu Trp Leu Thr Thr Leu Tyr Met
 1   5   10   15

Gly Ser Thr Trp Arg Arg Gly Gly Pro Arg Glu Pro Leu Trp Gln
             20   25   30

<210> 122
<211> 5
<212> PRT
<213> Arabidopsis sp.

<400> 122
Cys Gly Gly Gly Gly
 1   5

<210> 123
<211> 23
<212> PRT
<213> Arabidopsis sp.

<400> 123
Lys Val Leu Trp Trp Trp Leu Arg Arg Ile Asp Leu Thr Ser Pro Phe
 1   5   10   15

Val Trp Arg Val Ser Ile Leu
             20

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<210> 124
<211> 12
<212> PRT
<213> Arabidopsis sp.

<400> 124
Thr Gly Val Cys Ile Thr Ser Val Leu Glu Leu Val
  1               5                  10


<210> 125
<211> 9
<212> PRT
<213> Arabidopsis sp.

<400> 125
Arg Ser Ser Lys Gly Phe Trp Ile Leu
  1               5


<210> 126
<211> 36
<212> PRT
<213> Arabidopsis sp.

<400> 126
Ala Leu Arg Gly Arg Glu Lys Ala Val Asn His Val Phe Leu Met Ile
  1               5                  10                  15

Cys Val Met Met Ile Met Cys Lys Ile Phe Asp Ile Leu Tyr Ser Ser
              20                  25                  30

Leu Glu Cys Phe
          35


<210> 127
<211> 13
<212> PRT
<213> Arabidopsis sp.

<400> 127
Asp Phe Phe Ile Phe Ile Phe Tyr Phe Leu Leu Gly Ile
  1               5                  10


<210> 128
<211> 7
<212> PRT
<213> Arabidopsis sp.

<400> 128
Pro Val Tyr Met Ser Gln Lys
  1               5
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<210> 129
<211> 9
<212> PRT
<213> Arabidopsis sp.

<400> 129
Asn Ile Arg Lys Gln Lys Tyr Phe Ile
 1   5

<210> 130
<211> 14
<212> PRT
<213> Arabidopsis sp.

<400> 130
Pro Leu Asn Ile Asn Leu Ser Leu Phe Ile Ile Ile Phe Leu
 1   5   10

<210> 131
<211> 10
<212> PRT
<213> Arabidopsis sp.

<400> 131
His Thr Leu Phe Lys Lys Asn Leu Glu Ile
 1   5   10

<210> 132
<211> 8
<212> PRT
<213> Arabidopsis sp.

<400> 132
Ile Val Lys Asn Ile Gly Phe Thr
 1   5

<210> 133
<211> 8
<212> PRT
<213> Arabidopsis sp.

<400> 133
Met Arg Ile Ile Lys Phe Thr Asn
 1   5

<210> 134
<211> 5
<212> PRT
<213> Arabidopsis sp.

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<400> 134
Pro Tyr Ile Tyr Phe
 1               5


<210> 135
<211> 14
<212> PRT
<213> Arabidopsis sp.

<400> 135
Arg Phe Lys Leu Ile Leu Phe Leu Pro Tyr Met His Asn Ile
 1               5                  10


<210> 136
<211> 39
<212> PRT
<213> Arabidopsis sp.

<400> 136
Leu Gly Met Asn Thr Asn Ile Tyr Asn Asp Ile Asn Ile Ser Leu Thr
 1               5                  10                  15

Gly His Ser Lys Met Tyr Ile Leu Ile Tyr Gln His Phe Phe Ile Gly
              20                  25                  30

Leu Leu Asn Gln Val Val Thr
          35


<210> 137
<211> 35
<212> PRT
<213> Arabidopsis sp.

<400> 137
Val Asn Ala Phe Phe Phe Ile Ile Leu Tyr Met Asn Leu Asn Leu Ser
 1               5                  10                  15

Cys Gln Thr Ser Ser Lys Pro Asn Ile Tyr Ile His Ile Val Leu Tyr
              20                  25                  30

Phe Glu Asn
          35


<210> 138
<211> 11
<212> PRT
<213> Arabidopsis sp.

<400> 138
Asn Phe Leu Lys Phe Pro Ile Leu Phe Ser Phe
 1               5                  10
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<210> 139
<211> 55
<212> PRT
<213> Arabidopsis sp.

<400> 139
Ser Lys Gln Val Gln Ile Arg Phe Phe Gln Ile Ile Ile Phe Leu Asn
1   5   10   15

Lys Val Phe Tyr Lys Lys Lys Ser Thr Ser Tyr Leu Lys Asn Pro Leu
            20   25   30

His Tyr Pro Phe His Gln His Gln Arg Arg Arg Glu Lys Lys Lys Arg
        35   40   45

Arg Val Val Asn Gly Glu Gly
    50   55

<210> 140
<211> 6
<212> PRT
<213> Arabidopsis sp.

<400> 140
Phe His Ser Lys His Ile
1   5

<210> 141
<211> 15
<212> PRT
<213> Arabidopsis sp.

<400> 141
Val Met Lys Ser Ile Tyr Phe Asn Cys Val Phe Met Ile Asp Gln
1   5   10   15

<210> 142
<211> 19
<212> PRT
<213> Arabidopsis sp.

<400> 142
His Leu Gly Leu Asn Phe Leu Val Ile Tyr Tyr Val Ile Arg Pro Met
1   5   10   15

His Asp Pro

<210> 143
<211> 4
<212> PRT
<213> Arabidopsis sp.

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<400> 143
Asn Phe Tyr Phe
  1


<210> 144
<211> 6
<212> PRT
<213> Arabidopsis sp.

<400> 144
Ile Cys Leu Gly Lys Pro
  1               5


<210> 145
<211> 107
<212> PRT
<213> Arabidopsis sp.

<400> 145
Gly Phe Ala Thr Arg Thr Lys Ser Asp Lys Arg Ala Asn Arg Lys Gly
  1               5                  10                  15

Glu Ile Ser Ala Tyr Gln Gly Lys Arg His Leu Val Ala Leu Ile Phe
              20                  25                  30

Tyr Ser Leu Leu Tyr Val Phe Leu Lys Ile Lys Glu Arg Arg Gly Leu
              35                  40                  45

Asn Leu Ile Thr Ile Arg Phe Gln Arg Asp Val Lys Ile His Leu Ile
      50                  55                  60

Asn Ser Tyr Thr Leu Val Ile Ile Phe Lys Thr Lys Lys Arg Asn Phe
  65                  70                  75                  80

Gln Thr Phe Lys Leu Lys Thr Glu Phe Arg Lys Cys Gln Arg Ile Asp
                  85                  90                  95

Asn Asp Ile Gln Ile Cys Arg Val Ser Lys Thr
              100                 105


<210> 146
<211> 10
<212> PRT
<213> Arabidopsis sp.

<400> 146
Asn Lys Lys Ile Ile Asn Ile Phe Ile Ile
  1               5                  10


<210> 147
<211> 30
<212> PRT
<213> Arabidopsis sp.
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<400> 147
Ser Trp Asn Leu Gly Tyr Lys Ile Lys Leu Lys Ile Ile Val Asp Phe
  1   5   10   15

Phe Val Phe Val Lys Gln Asn Ser Asn Thr Ile Cys Phe Phe
              20   25   30

<210> 148
<211> 5
<212> PRT
<213> Arabidopsis sp.

<400> 148
Tyr Lys Glu Thr Lys
  1   5

<210> 149
<211> 15
<212> PRT
<213> Arabidopsis sp.

<400> 149
Val Gln Ile Val Phe Phe Leu Thr Phe Ser Gln Lys Ser Gln Asp
  1   5   10   15

<210> 150
<211> 38
<212> PRT
<213> Arabidopsis sp.

<400> 150
Cys Ile Tyr Gln Glu Ile Glu Ile Lys Thr Phe Val Phe Lys Tyr Ser
  1   5   10   15

Ser Phe Thr Ile Tyr Arg Val Gln Phe Leu Lys Phe Lys Lys Ser Phe
              20   25   30

Thr Tyr Ile Leu Leu Asp
          35

<210> 151
<211> 147
<212> PRT
<213> Arabidopsis sp.

<400> 151
Gln Arg Lys Phe Glu Leu Arg Tyr Ile Pro Ser Val Ala Thr His Ala
  1   5   10   15

Ser His His Gln Ser Phe Asp Leu Asn Gln Pro Ala Ala Glu Asp Asp
              20   25   30

```
Asn Gly Gly Asp Asn Lys Ser Leu Leu Ser Arg Met Gln Asn Pro Leu
        35              40                  45

Arg His Phe Ser Ala Ser Ser Asp Tyr Asn Ser Tyr Glu Asp Gln Gly
    50              55                  60

Tyr Val Leu Asp Glu Asp Gln Asp Tyr Ala Leu Glu Glu Asp Val Pro
65              70                  75                      80

Leu Phe Leu Asp Glu Asp Val Pro Leu Leu Pro Ser Val Lys Leu Pro
                85              90                  95

Ile Val Glu Lys Leu Pro Arg Ser Ile Thr Trp Val Phe Thr Lys Arg
            100             105             110

His Val Cys Phe Leu Phe Arg Thr Ser Phe Lys Ile Leu Ile Ile Tyr
        115             120             125

Tyr Ile Val Ile Thr His Ser Ala Tyr Ile His Phe Phe Asn Ile Ala
    130             135             140

Val Ala Ser
145


<210> 152
<211> 6
<212> PRT
<213> Arabidopsis sp.

<400> 152
Trp Leu Lys Val Ile Leu
  1               5


<210> 153
<211> 8
<212> PRT
<213> Arabidopsis sp.

<400> 153
Leu Val Arg Asp Lys Ser Ile Ile
  1               5


<210> 154
<211> 4
<212> PRT
<213> Arabidopsis sp.

<400> 154
Met Val Arg His
  1
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<210> 155
<211> 26
<212> PRT
<213> Arabidopsis sp.

<400> 155
Ala Val Lys Lys Met Arg Lys Met Lys Lys Lys Met Arg Lys Lys Ser
1   5   10   15

Arg Lys Lys Asn Ala Asn Phe Leu Lys Met
                20   25

<210> 156
<211> 5
<212> PRT
<213> Arabidopsis sp.

<400> 156
Thr Asp Leu Tyr Gly
1   5

<210> 157
<211> 7
<212> PRT
<213> Arabidopsis sp.

<400> 157
Phe Leu His Tyr Ile Cys Ser
1   5

<210> 158
<211> 25
<212> PRT
<213> Arabidopsis sp.

<400> 158
Leu Leu Ile Cys Ser Pro Tyr Leu Ile Asn Cys Ser Arg Asn Phe Gln
1   5   10   15

Asp Gly Trp Ala Gly Leu Trp Phe Gly
                20   25

<210> 159
<211> 32
<212> PRT
<213> Arabidopsis sp.

<400> 159
Ser Gly Arg Ala Ala Cys Ser Arg Gln Val Pro Arg Ser Gly Cys Phe
1   5   10   15

Gly His Ile Gly Asn Asn Ile Arg Ile Lys Thr Ser Tyr Val Asp Gln
                20   25   30

<210> 160
<211> 12
<212> PRT
<213> Arabidopsis sp.

<400> 160
Leu Ser Cys Leu Phe Asn Phe Cys Cys Phe Ser Ser
  1   5   10

<210> 161
<211> 10
<212> PRT
<213> Arabidopsis sp.

<400> 161
Ile Phe Lys Ser Asn Val Gly Lys Ile Gln
  1   5   10

<210> 162
<211> 4
<212> PRT
<213> Arabidopsis sp.

<400> 162
Trp Asn Cys Trp
  1

<210> 163
<211> 14
<212> PRT
<213> Arabidopsis sp.

<400> 163
Phe Asp Ile Gln Asp Asn Asn Tyr Cys Phe Pro Gly Phe Cys
  1   5   10

<210> 164
<211> 59
<212> PRT
<213> Arabidopsis sp.

<400> 164
Thr Ser Leu Pro Ser Leu His Gly Asn Phe Glu Ser Phe Phe Phe Asn
  1   5   10   15

Leu Ala Thr Lys Lys Gly Asp Asp His Thr Cys Phe Tyr Phe Ile Leu
             20   25   30

Ser Phe Val Leu Gln Ile Phe Asp Cys His Met His Glu Lys Tyr Glu
             35   40   45

Pro Glu Ser Arg Ser Val Ser Ile Lys Phe Ile
         50   55

<210> 165
<211> 15
<212> PRT
<213> Arabidopsis sp.

<400> 165
Ile Ile Leu Leu Val Ser Gln Pro Leu Tyr Ile Arg Leu Ser Asp
1   5   10   15

<210> 166
<211> 56
<212> PRT
<213> Arabidopsis sp.

<400> 166
Ile Ala Leu Ala Cys Gln Ser Glu Asp Lys Ser Ser Leu Phe Glu Asp
1   5   10   15

Glu Asp Arg Gln Pro Cys Ser Glu His Cys Tyr Leu Lys Val Ser Ile
            20   25   30

Ser Leu Pro Leu Ser Leu Asn Phe Phe Val Tyr Ser Leu Ile Thr Phe
            35   40   45

Ile Ser Tyr Trp Phe Asn Ile Lys
        50   55

<210> 167
<211> 50
<212> PRT
<213> Arabidopsis sp.

<400> 167
Val Arg Ser Val Thr Glu Ala Asp His Val Met Asp Asn Asp Asn Ser
1   5   10   15

Ile Ser Asn Lys Ile Val Val Ser Asp Pro Asn Asn Thr Met Trp Thr
            20   25   30

Pro Val Glu Lys Asp Leu Tyr Leu Lys Gly Ile Glu Ile Phe Gly Arg
            35   40   45

Asn Arg
        50

<210> 168
<211> 68
<212> PRT
<213> Arabidopsis sp.

<400> 168
Lys Asn Lys Asn Arg Phe Asn Ala Leu Ile Tyr Ile Leu Thr Leu Tyr
1   5   10   15

Ser Leu Ile Met Leu Val Arg Ser Cys Asp Val Ala Leu Asn Ile Leu
          20   25   30

Arg Gly Leu Lys Thr Cys Leu Glu Ile Tyr Asn Tyr Met Arg Glu Gln
          35   40   45

Asp Gln Cys Thr Met Ser Leu Asp Leu Asn Lys Thr Thr Gln Arg His
     50   55   60

Asn Gln Val His
  65

<210> 169
<211> 23
<212> PRT
<213> Arabidopsis sp.

<400> 169
Lys His Met Lys Phe Pro Ile Cys Val Asp Gly Phe Ile Thr Gly Tyr
  1   5   10   15

Gln Lys Ser Ile Ser Lys Lys
               20

<210> 170
<211> 22
<212> PRT
<213> Arabidopsis sp.

<400> 170
Val Gly Pro Gln Lys Ile Glu Thr Pro Lys Ile Cys Ser Leu Ser Ala
  1   5   10   15

Cys Phe Lys Glu Asn Asn
               20

<210> 171
<211> 41
<212> PRT
<213> Arabidopsis sp.

<400> 171
Ala Leu His Thr Met His Leu Gln Val Lys Met Trp Thr Ala Met Pro
  1   5   10   15

Leu Phe Asn Ser Arg Lys Leu Leu Arg Glu Ile Leu Arg Val Cys His
               20   25   30

Ser Ile Phe Pro Lys Pro Glu Asp Pro
          35   40

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<210> 172
<211> 108
<212> PRT
<213> Arabidopsis sp.

<400> 172
Val Cys Ile Phe Cys Ser Gly Ala Gln Arg Ile Ala Thr Ile Ala Leu
1               5                   10                  15

Glu Asp Val Ile Val Gln Leu Ala Asn Ala Gln Ile Asp Asn Val Leu
            20                  25                  30

Val Leu Leu Leu Ile Val Asn Ala Ile Gln Ile Phe Val Gly Val Val
        35                  40                  45

Leu Leu Gly Asn Thr Phe Thr Ser Ile Ser Leu Tyr Thr Asn Ser Ile
    50                  55                  60

Ile Lys Val Ile Gln Thr Lys Ser Leu Ile Lys Lys Thr Leu Tyr Ile
65                  70                  75                  80

Ala Val Glu Met Ala Leu Leu Val Arg His Gln Cys Lys Ser Asn Ala
                85                  90                  95

Arg Thr Cys Asn Ser Ser Phe Lys Pro Ile Lys Arg
                100                 105


<210> 173
<211> 17
<212> PRT
<213> Arabidopsis sp.

<400> 173
Ser Thr Ser Asn Pro Tyr Arg Lys Phe Lys Thr Asn Tyr Thr Lys Asp
1               5                   10                  15

Ile


<210> 174
<211> 7
<212> PRT
<213> Arabidopsis sp.

<400> 174
Leu Ser Phe Pro Val Phe Tyr
1               5


<210> 175
<211> 39
<212> PRT
<213> Arabidopsis sp.
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<400> 175
Ile Leu Ile Gly Lys Ser Asp Val His Gly Trp Gly Ala Phe Thr Trp
 1   5   10   15

Val Ser Asn His Val Asn Ile Arg Ile Ser Leu Ile Val Ile Gly Ala
            20   25   30

Phe Ile Thr Leu Phe Phe Phe
          35

<210> 176
<211> 4
<212> PRT
<213> Arabidopsis sp.

<400> 176
Cys Phe Ile Leu
 1

<210> 177
<211> 6
<212> PRT
<213> Arabidopsis sp.

<400> 177
Thr Ile Lys Tyr Ile Val
 1   5

<210> 178
<211> 53
<212> PRT
<213> Arabidopsis sp.

<400> 178
Tyr Gly Leu Thr Arg Gln Asp Ser Leu Lys Lys Asn Glu Tyr Leu Gly
 1   5   10   15

Glu Tyr Thr Gly Glu Leu Ile Thr His Asp Glu Ala Asn Glu Arg Gly
            20   25   30

Arg Ile Glu Asp Arg Ile Gly Ser Ser Tyr Leu Phe Thr Leu Asn Asp
          35   40   45

Gln Val Thr Ser Glu
        50

<210> 179
<211> 28
<212> PRT
<213> Arabidopsis sp.

<400> 179
Ser Asn Val Leu Ile Ile Arg Gly Leu His Ile Tyr Ser Asn Gln Ser
    1   5   10   15

Asn Ile Tyr Phe Thr Ala Arg Asn Arg Cys Ser Pro
                20   25

<210> 180
<211> 13
<212> PRT
<213> Arabidopsis sp.

<400> 180
Arg Lys Arg Val Gln Ile Ser Gln Ser Leu Ser Lys Thr
    1   5   10

<210> 181
<211> 16
<212> PRT
<213> Arabidopsis sp.

<400> 181
Leu Leu Arg Gln Gly Thr Lys Pro Leu Tyr Phe Ile Leu Asn Lys Tyr
    1   5   10   15

<210> 182
<211> 13
<212> PRT
<213> Arabidopsis sp.

<400> 182
His Tyr Thr Asn Lys Asn Thr Tyr Val Ser Phe Phe Ser
    1   5   10

<210> 183
<211> 24
<212> PRT
<213> Arabidopsis sp.

<400> 183
Ile Val Tyr Gln Leu Tyr Ser Ser Leu Ile Gly Phe His Ile Glu Asp
    1   5   10   15

Ile Pro Arg Asn Ser Asn Ser Phe
                20

<210> 184
<211> 78
<212> PRT
<213> Arabidopsis sp.

<400> 184
Met Ile Phe Ser Cys Arg Glu Asn Leu Gly Tyr Glu Asn Leu Trp Phe
1   5   10   15

Arg Val Gln Leu Met Ile Val Arg Gly Asp Gln Arg Ile Gly Leu Phe
            20   25   30

Ala Glu Arg Ala Ile Glu Glu Gly Glu Glu Leu Phe Phe Asp Tyr Cys
        35   40   45

Tyr Gly Pro Glu His Ala Asp Trp Ser Arg Gly Arg Glu Pro Arg Lys
    50   55   60

Thr Gly Ala Ser Lys Arg Ser Lys Glu Ala Arg Pro Ala Arg
65   70   75

<210> 185
<211> 37
<212> PRT
<213> Arabidopsis sp.

<400> 185
Gly Glu Ala Ala Ile Gln Ala Val Leu Phe Leu Cys Tyr Gly Ile Ser
1   5   10   15

Ile Asn Asn Val Met Leu Phe Cys Val Thr Lys Pro Lys Leu Lys Phe
            20   25   30

Leu Phe Tyr Leu Phe
        35

<210> 186
<211> 9
<212> PRT
<213> Arabidopsis sp.

<400> 186
Gly Val Leu Phe Val Ser Tyr Val Ser
1   5

<210> 187
<211> 10
<212> PRT
<213> Arabidopsis sp.

<400> 187
Leu Ser Lys Phe Ser Phe Cys Ile Ser Ile
1   5   10

<210> 188
<211> 6
<212> PRT
<213> Arabidopsis sp.

<400> 188
Lys Gln Cys Leu Cys Cys
 1   5

<210> 189
<211> 29
<212> PRT
<213> Arabidopsis sp.

<400> 189
Thr Phe Gly Lys Lys Lys Leu Cys Thr Thr Leu His Leu Phe Ser Leu
 1   5   10   15

His Leu Ala Lys Asn His Ile Thr Gln Val Cys Gly Thr
                20   25

<210> 190
<211> 6
<212> PRT
<213> Arabidopsis sp.

<400> 190
Cys Thr Lys Met Ser Lys
 1   5

<210> 191
<211> 12
<212> PRT
<213> Arabidopsis sp.

<400> 191
Trp Val Leu Ser Leu Lys Lys Asn Ile Gly Tyr Glu
 1   5   10

<210> 192
<211> 19
<212> PRT
<213> Arabidopsis sp.

<400> 192
Ser Ile Val Arg Ile Leu Gly Ile Ser Ser Phe Gly Phe Lys Thr Phe
 1   5   10   15

Phe Glu Ile

<210> 193
<211> 24
<212> PRT
<213> Arabidopsis sp.

<400> 193
Phe Cys Ser Leu Leu Ser Asn Thr Trp Lys Asn His Gln Gln Ser Gly
 1   5   10   15

Cys Ser Leu Arg Lys Val Leu Leu
            20

<210> 194
<211> 10
<212> PRT
<213> Arabidopsis sp.

<400> 194
Cys Lys Tyr Val Phe Asp Ala Ser Asn Ile
 1   5   10

<210> 195
<211> 4
<212> PRT
<213> Arabidopsis sp.

<400> 195
Tyr Leu Asn Lys
 1

<210> 196
<211> 13
<212> PRT
<213> Arabidopsis sp.

<400> 196
Lys Gln Lys Lys Arg Lys Lys Leu Phe Lys Ile Arg Lys
 1   5   10

<210> 197
<211> 24
<212> PRT
<213> Arabidopsis sp.

<400> 197
Leu Phe Ser Lys Asn Leu Asn Tyr Lys Leu Lys Cys Leu Glu Ser Arg
 1   5   10   15

Thr Thr Ile Ala Lys Tyr Lys Cys
            20

<210> 198
<211> 5
<212> PRT
<213> Arabidopsis sp.

<400> 198
Ile Tyr Met Lys Met
  1   5

<210> 199
<211> 13
<212> PRT
<213> Arabidopsis sp.

<400> 199
Lys Thr Cys Trp Ile Cys Gly Ile Val Asn Asp His Gly
  1   5   10

<210> 200
<211> 4
<212> PRT
<213> Arabidopsis sp.

<400> 200
Met Ala Gly Ser
  1

<210> 201
<211> 4
<212> PRT
<213> Arabidopsis sp.

<400> 201
Ile His Tyr Phe
  1

<210> 202
<211> 48
<212> PRT
<213> Arabidopsis sp.

<400> 202
Lys Ser Asn Phe Phe Ile Ser Ile Ile Cys Phe Lys Glu Lys Lys Asn
  1   5   10   15

Thr Arg Arg Leu Ser Ile Cys Arg Leu Cys Ser Ser Val Asn Leu Tyr
              20   25   30

Phe Lys Thr Gly Gly Leu Phe Ile Thr Ile Ser Leu Asp Met Phe Leu
          35   40   45

<210> 203
<211> 24
<212> PRT
<213> Arabidopsis sp.

<400> 203
Cys Arg Pro Lys Asn Arg Glu Ile Arg Lys Gly Thr Phe Val Val Ile
 1   5   10   15

Val Thr Lys Gln Lys Ser Leu Tyr
            20

<210> 204
<211> 11
<212> PRT
<213> Arabidopsis sp.

<400> 204
Ile Ile Arg Lys Asp Glu Lys Ile Lys Pro Leu
 1   5   10

<210> 205
<211> 12
<212> PRT
<213> Arabidopsis sp.

<400> 205
Leu Asp Asp His Arg Arg Gly Cys Gln Leu Gln Ser
 1   5   10

<210> 206
<211> 34
<212> PRT
<213> Arabidopsis sp.

<400> 206
Cys Phe Tyr Ile Asp Leu Ser Tyr Ile Leu Cys Ser Phe Thr Phe Lys
 1   5   10   15

Lys Gln Tyr His Pro Ile Phe Phe Leu Leu Leu Ser Val Ser Ile Phe
            20   25   30

Ala Asn

<210> 207
<211> 21
<212> PRT
<213> Arabidopsis sp.

<400> 207
Arg Asn Thr Lys Glu His Lys Lys Gln Leu Val Pro Asp Ser Thr Ile
 1   5   10   15

Ser Asn Asp Leu His
            20

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<210> 208
<211> 106
<212> PRT
<213> Arabidopsis sp.

<400> 208
Pro Pro Pro Pro Ser Ile Phe Pro Leu Ser Phe Thr Ser Leu Ser Leu
1               5                   10                  15

Tyr Leu Leu Asn Ser Gly His Arg Leu Arg Arg Phe Leu Cys Tyr Ser
            20                  25                  30

Pro Gly Arg Cys Arg Ser Leu Ile His Asp Leu Val Ser His His Arg
        35                  40                  45

Leu His Phe Asn Pro Gln Ser Leu Arg Lys Thr Arg Met Leu Cys Ser
    50                  55                  60

Pro Phe Pro Ser Leu His Leu Leu Asp Arg Ser Leu His Arg Pro Ser
65                  70                  75                  80

Leu Cys Leu Trp Asp Gln Lys Asn His Glu His Asp His Val Tyr Lys
                85                  90                  95

Ser Arg Gln Lys Leu Val Ser Cys Asp Thr
            100                 105


<210> 209
<211> 5
<212> PRT
<213> Arabidopsis sp.

<400> 209
Lys Met Asp Val Gly
1               5


<210> 210
<211> 15
<212> PRT
<213> Arabidopsis sp.

<400> 210
Gly Phe Val Leu Phe Gly Ala Thr Arg Ser Asp Ala Asp Val Val
1               5                   10                  15


<210> 211
<211> 32
<212> PRT
<213> Arabidopsis sp.

<400> 211
Gln His Tyr Ile Trp Gly Leu Arg Gly Gly Glu Val Val Arg Glu Ser
1               5                   10                  15
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Arg Cys Gly Ser Asp Leu Trp Tyr Asn Val Val Val Glu Ala Lys Arg
          20   25   30

<210> 212
<211> 11
<212> PRT
<213> Arabidopsis sp.

<400> 212
Gly Arg Lys Ser Cys Gly Gly Gly Tyr Gly Gly
  1   5   10

<210> 213
<211> 42
<212> PRT
<213> Arabidopsis sp.

<400> 213
Pro Pro His Ser Phe Gly Gly Ser Gln Phe Cys Glu Leu Val Tyr Val
  1   5   10   15

Leu His Leu Cys Trp Asn Trp Phe Asn Glu Asp Leu Gln Arg Val Phe
          20   25   30

Gly Phe Cys Glu Tyr Val Asp Phe Glu His
        35   40

<210> 214
<211> 6
<212> PRT
<213> Arabidopsis sp.

<400> 214
Glu Val Glu Lys Arg Leu
  1   5

<210> 215
<211> 4
<212> PRT
<213> Arabidopsis sp.

<400> 215
Ile Met Cys Phe
  1

<210> 216
<211> 27
<212> PRT
<213> Arabidopsis sp.

<400> 216
Ser Cys Val Arg Tyr Leu Thr Tyr Tyr Thr His Leu Leu Asn Val Phe
1   5   10   15

Glu Ile Phe Leu Phe Leu Phe Ser Ile Ser Cys
          20   25

<210> 217
<211> 25
<212> PRT
<213> Arabidopsis sp.

<400> 217
Glu Phe Asn Pro Tyr Ile Cys His Lys Asn Ser Arg Ile Ser Glu Ser
1   5   10   15

Lys Asn Ile Leu Ser Lys Asn Asn His
          20   25

<210> 218
<211> 16
<212> PRT
<213> Arabidopsis sp.

<400> 218
Leu Tyr Phe Tyr Asn Thr Pro Phe Leu Arg Lys Thr Trp Arg Phe Asn
1   5   10   15

<210> 219
<211> 12
<212> PRT
<213> Arabidopsis sp.

<400> 219
Lys Ile Ser Asp Leu Arg Arg Ser Phe Lys Cys Val
1   5   10

<210> 220
<211> 6
<212> PRT
<213> Arabidopsis sp.

<400> 220
Leu Asn Leu Arg Ile Glu
1   5

<210> 221
<211> 25
<212> PRT
<213> Arabidopsis sp.

<400> 221
Tyr Ser His Ile Tyr Ile Phe Glu Asp Leu Asn Ser Phe Cys Phe Phe
1   5   10   15

His Ile Cys Ile Ile Tyr Lys Leu Lys
            20   25

<210> 222
<211> 9
<212> PRT
<213> Arabidopsis sp.

<400> 222
Ile Leu Ile Tyr Ile Met Thr Leu Ile
1   5

<210> 223
<211> 10
<212> PRT
<213> Arabidopsis sp.

<400> 223
Val Leu Pro Asp Thr Pro Lys Cys Ile Tyr
1   5   10

<210> 224
<211> 9
<212> PRT
<213> Arabidopsis sp.

<400> 224
Ser Ile Asn Ile Phe Ser Leu Val Tyr
1   5

<210> 225
<211> 14
<212> PRT
<213> Arabidopsis sp.

<400> 225
Thr Lys Leu Ser His Lys Tyr Glu Leu Thr Pro Phe Phe Leu
1   5   10

<210> 226
<211> 13
<212> PRT
<213> Arabidopsis sp.

<400> 226
Ala Val Lys Arg Gln Ala Asn Pro Thr Ser Thr Tyr Ile
1   5   10

74

<210> 227
<211> 30
<212> PRT
<213> Arabidopsis sp.

<400> 227
Tyr Tyr Ile Leu Lys Ile Lys Ile Phe Leu Asn Phe Pro Tyr Tyr Phe
 1   5   10   15

Pro Phe Lys Ala Ser Lys Ser Lys Tyr Val Ser Ser Arg Leu
            20   25   30

<210> 228
<211> 15
<212> PRT
<213> Arabidopsis sp.

<400> 228
Phe Ser Leu Ile Arg Phe Ser Thr Lys Lys Asn Gln Leu Leu Ile
 1   5   10   15

<210> 229
<211> 39
<212> PRT
<213> Arabidopsis sp.

<400> 229
Lys Thr Leu Cys Ile Ile Leu Phe Thr Asn Ile Arg Glu Asp Glu Lys
 1   5   10   15

Lys Arg Arg Gly Glu Trp Leu Met Glu Lys Val Ser Phe Thr Pro Asn
            20   25   30

Ile Tyr Glu Leu Thr Arg Leu
          35

<210> 230
<211> 9
<212> PRT
<213> Arabidopsis sp.

<400> 230
Asn Pro Tyr Ile Leu Ile Val Cys Leu
 1   5

<210> 231
<211> 4
<212> PRT
<213> Arabidopsis sp.

<400> 231
Ile Asn Asn Ile
 1

75

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<210> 232
<211> 19
<212> PRT
<213> Arabidopsis sp.

<400> 232
Ser Ile Met Leu Phe Val Pro Cys Met Ile His Lys Thr Phe Ile Phe
 1               5                   10                  15

Glu Phe Val


<210> 233
<211> 37
<212> PRT
<213> Arabidopsis sp.

<400> 233
Glu Asn His Glu Asp Asp Gly Glu Gly Leu Pro Pro Glu Leu Asn Gln
 1               5                   10                  15

Ile Lys Glu Gln Ile Glu Lys Glu Arg Phe Leu His Ile Lys Val Arg
            20                  25                  30

Asp Ile Trp Leu Leu
            35


<210> 234
<211> 9
<212> PRT
<213> Arabidopsis sp.

<400> 234
Tyr Phe Ile Leu Phe Cys Met Phe Phe
 1               5


<210> 235
<211> 10
<212> PRT
<213> Arabidopsis sp.

<400> 235
Lys Leu Arg Arg Gly Glu Asp Leu Ile Ser
 1               5                   10


<210> 236
<211> 11
<212> PRT
<213> Arabidopsis sp.

<400> 236
Leu Tyr Asp Ser Lys Glu Met Leu Arg Tyr Ile
 1               5                   10
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76

<210> 237
<211> 4
<212> PRT
<213> Arabidopsis sp.

<400> 237
Thr Val Ile His
   1

<210> 238
<211> 13
<212> PRT
<213> Arabidopsis sp.

<400> 238
Ser Leu Lys Leu Lys Arg Glu Ile Ser Lys Leu Leu Asn
   1   5   10

<210> 239
<211> 26
<212> PRT
<213> Arabidopsis sp.

<400> 239
Lys Gln Asn Leu Glu Asn Ala Ser Glu Ser Ile Thr Thr Ser Arg Ser
   1   5   10   15

Val Gly Tyr Pro Lys Leu Arg Ile Lys Lys
               20   25

<210> 240
<211> 4
<212> PRT
<213> Arabidopsis sp.

<400> 240
Leu Ile Tyr Leu
   1

<210> 241
<211> 5
<212> PRT
<213> Arabidopsis sp.

<400> 241
Tyr Lys Ala Gly Thr
   1   5

<210> 242
<211> 29
<212> PRT
<213> Arabidopsis sp.

77

<400> 242
Ile Phe Leu Phe Leu Ser Asn Lys Ile Val Ile Gln Phe Val Phe Phe
  1   5   10   15

Ser Thr Lys Lys Leu Asn Arg Ser Lys Leu Phe Phe Phe
            20   25

<210> 243
<211> 34
<212> PRT
<213> Arabidopsis sp.

<400> 243
His Ser Ala Lys Lys Ala Lys Ile Asp Ala Tyr Ile Lys Lys Ser Lys
  1   5   10   15

Ser Lys Leu Leu Tyr Ser Ser Ile Leu Val Ser Leu Tyr Ile Glu Ser
            20   25   30

Ser Phe

<210> 244
<211> 18
<212> PRT
<213> Arabidopsis sp.

<400> 244
Asn Leu Lys Asn His Leu Pro Ile Tyr Tyr Leu Ile Asn Arg Glu Asn
  1   5   10   15

Ser Ser

<210> 245
<211> 17
<212> PRT
<213> Arabidopsis sp.

<400> 245
Asp Thr Phe Gln Val Trp Leu Leu Met Leu His Thr Ile Asn Arg Leu
  1   5   10   15

Thr

<210> 246
<211> 100
<212> PRT
<213> Arabidopsis sp.

<400> 246
Thr Ser Pro Leu Gln Arg Met Ile Met Glu Glu Thr Thr Asn His Phe
  1   5   10   15

78

```
Cys Arg Glu Cys Lys Thr His Phe Val Ile Ser Val Pro His Leu Ile
              20              25              30

Ile Ile Leu Thr Lys Ile Lys Val Met Phe Leu Met Arg Ile Lys Ile
          35              40              45

Met Leu Leu Lys Lys Met Tyr His Tyr Phe Leu Met Lys Met Tyr His
      50              55              60

Tyr Tyr Gln Val Ser Ser Phe Gln Leu Leu Arg Ser Tyr His Asp Pro
65              70              75              80

Leu His Gly Ser Ser Pro Lys Gly Met Cys Val Phe Cys Phe Val Leu
              85              90              95

Val Ser Lys Tyr
          100
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<210> 247
<211> 4
<212> PRT
<213> Arabidopsis sp.

<400> 247
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Ser Tyr Thr Ile
  1
```

<210> 248
<211> 13
<212> PRT
<213> Arabidopsis sp.

<400> 248
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Ser Leu Ile Val His Ile Tyr Ile Ser Leu Thr Leu Gln
  1             5                   10
```

<210> 249
<211> 4
<212> PRT
<213> Arabidopsis sp.

<400> 249
```
Pro Ala Asp Gly
  1
```

<210> 250
<211> 4
<212> PRT
<213> Arabidopsis sp.

<400> 250
```
Phe Cys Asp Trp
  1
```

79

```
<210> 251
<211> 8
<212> PRT
<213> Arabidopsis sp.

<400> 251
Glu Thr Asn Leu Leu Phe Glu Trp
 1               5


<210> 252
<211> 6
<212> PRT
<213> Arabidopsis sp.

<400> 252
Gly Thr Arg Ile Glu Gln
 1               5


<210> 253
<211> 11
<212> PRT
<213> Arabidopsis sp.

<400> 253
Gly Arg Asn Gln Glu Arg Lys Met Arg Ile Phe
 1               5                   10


<210> 254
<211> 18
<212> PRT
<213> Arabidopsis sp.

<400> 254
Arg Cys Arg Pro Ile Tyr Met Val Ser Phe Cys Ile Thr Tyr Val Leu
 1               5                   10                  15

Asp Tyr


<210> 255
<211> 5
<212> PRT
<213> Arabidopsis sp.

<400> 255
Phe Val Val His Ile
 1               5


<210> 256
<211> 41
<212> PRT
<213> Arabidopsis sp.
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<400> 256
Thr Ala Gln Glu Ile Phe Arg Thr Val Gly Gln Asp Tyr Gly Leu Asp
1   5   10   15

Asp Leu Val Val Arg Arg Ala Leu Ala Lys Tyr Leu Glu Val Asp Val
                20   25   30

Ser Asp Ile Leu Val Thr Ile Phe Glu
            35   40

<210> 257
<211> 30
<212> PRT
<213> Arabidopsis sp.

<400> 257
Lys Leu His Thr Ser Ile Asn Asn Phe Pro Ala Tyr Leu Ile Phe Val
1   5   10   15

Val Phe Arg Arg Glu Lys Cys Phe Lys Phe Ser Asn Leu Met
                20   25   30

<210> 258
<211> 51
<212> PRT
<213> Arabidopsis sp.

<400> 258
Glu Arg Tyr Asn Glu Leu Lys Leu Lys Asn Asp Gly Thr Ala Gly Glu
1   5   10   15

Ala Ser Asp Leu Thr Ser Lys Thr Ile Thr Thr Ala Phe Gln Asp Phe
                20   25   30

Ala Asp Arg Arg His Cys Arg Arg Cys Met Val Thr Leu Asn Leu Ser
            35   40   45

Phe Leu Ile
        50

<210> 259
<211> 36
<212> PRT
<213> Arabidopsis sp.

<400> 259
Pro Gln Lys Arg Glu Met Ile Ile His Val Phe Ile Leu Phe Tyr His
1   5   10   15

Leu Phe Tyr Arg Tyr Ser Ile Val Ile Cys Met Arg Ser Met Ser Pro
                20   25   30

Ser Leu Asp Pro
        35

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<210> 260
<211> 9
<212> PRT
<213> Arabidopsis sp.

<400> 260
Ala Leu Asn Ser Phe Lys Leu Phe Cys
 1               5


<210> 261
<211> 6
<212> PRT
<213> Arabidopsis sp.

<400> 261
Phe His Asn Pro Tyr Ile
 1               5


<210> 262
<211> 50
<212> PRT
<213> Arabidopsis sp.

<400> 262
Val Ile Asn Leu Ile Arg Leu Leu Trp Leu Val Arg Ala Lys Thr Asn
 1               5                  10                  15

Leu Val Cys Leu Arg Met Lys Ile Asp Asn His Ala Val Ser Ile Val
            20                  25                  30

Thr Ser Arg Ser Leu Ser Leu Ser Leu Ser Leu Ser Ile Phe Leu Ser
            35                  40                  45

Ile Pro
      50


<210> 263
<211> 12
<212> PRT
<213> Arabidopsis sp.

<400> 263
Leu Arg Leu Leu Val Thr Gly Leu Ile Leu Asn Arg
 1               5                  10


<210> 264
<211> 5
<212> PRT
<213> Arabidopsis sp.

<400> 264
Gln Lys Leu Ile Met
 1               5
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<210> 265
<211> 23
<212> PRT
<213> Arabidopsis sp.

<400> 265
Trp Ile Met Ile Thr Leu Tyr Gln Thr Arg Leu Trp Ser Gln Ile Gln
1   5   10   15

Thr Thr Leu Cys Gly Arg Leu
            20

<210> 266
<211> 5
<212> PRT
<213> Arabidopsis sp.

<400> 266
Arg Arg Ile Phe Thr
1   5

<210> 267
<211> 19
<212> PRT
<213> Arabidopsis sp.

<400> 267
Lys Glu Leu Arg Tyr Leu Gly Glu Thr Gly Lys Lys Ile Lys Ile Asp
1   5   10   15

Leu Met His

<210> 268
<211> 8
<212> PRT
<213> Arabidopsis sp.

<400> 268
Tyr Ile Tyr Leu His Cys Ile Pro
1   5

<210> 269
<211> 10
<212> PRT
<213> Arabidopsis sp.

<400> 269
Leu Cys Trp Phe Ala Val Val Met Leu His
1   5   10

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<211> 9
<212> PRT
<213> Arabidopsis sp.

<400> 270
Thr Tyr Phe Gly Gly Leu Arg Arg Ala
  1               5


<210> 271
<211> 15
<212> PRT
<213> Arabidopsis sp.

<400> 271
Arg Phe Thr Ile Thr Cys Ala Asn Lys Ile Asn Val Leu Cys His
  1               5                  10                  15


<210> 272
<211> 28
<212> PRT
<213> Arabidopsis sp.

<400> 272
Thr Leu Thr Lys Leu His Lys Asp Thr Ile Arg Tyr Thr Asn Leu Cys
  1               5                  10                  15

Arg Asn Tyr Ser His Asp Met Tyr Val Lys Asn Thr
              20                  25


<210> 273
<211> 95
<212> PRT
<213> Arabidopsis sp.

<400> 273
Ser Phe Leu Tyr Val Leu Met Val Leu Ser Gln Val Thr Lys Lys Val
  1               5                  10                  15

Ser Arg Lys Ser Ser Arg Ser Val Arg Lys Lys Ser Arg Leu Arg Lys
              20                  25                  30

Tyr Ala Arg Tyr Pro Pro Ala Leu Lys Lys Thr Thr Ser Gly Glu Ala
          35                  40                  45

Lys Phe Tyr Lys His Tyr Thr Pro Cys Thr Cys Lys Ser Lys Cys Gly
      50                  55                  60

Gln Gln Cys Pro Cys Leu Thr His Glu Asn Cys Cys Glu Lys Tyr Cys
    65                  70                  75                  80

Gly Tyr Val Ile Gln Phe Phe Leu Ser Arg Lys Ile His Glu Ile
              85                  90                  95
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<210> 274
<211> 22
<212> PRT
<213> Arabidopsis sp.

<400> 274
Phe Glu His Glu Phe Val Phe Phe Val Gln Val Leu Lys Gly Leu Gln
1               5                   10                  15

Gln Ser Leu Trp Arg Met
            20


<210> 275
<211> 16
<212> PRT
<213> Arabidopsis sp.

<400> 275
Leu Cys Asn Trp Pro Met His Lys Ser Thr Met Ser Leu Phe Cys Cys
1               5                   10                  15


<210> 276
<211> 11
<212> PRT
<213> Arabidopsis sp.

<400> 276
Met Arg Ser Arg Ser Leu Ser Glu Leu Ser Ser
1               5                   10


<210> 277
<211> 13
<212> PRT
<213> Arabidopsis sp.

<400> 277
Val Thr Leu Ser Leu Gln Tyr Leu Phe Ile Gln Ile Leu
1               5                   10


<210> 278
<211> 6
<212> PRT
<213> Arabidopsis sp.

<400> 278
Phe Lys Pro Lys Val Leu
1               5


<210> 279
<211> 5
<212> PRT
<213> Arabidopsis sp.
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<400> 279
Lys Lys Leu Tyr Ile
  1               5


<210> 280
<211> 7
<212> PRT
<213> Arabidopsis sp.

<400> 280
Leu Trp Arg Trp His Ser Trp
  1               5


<210> 281
<211> 17
<212> PRT
<213> Arabidopsis sp.

<400> 281
Asp Thr Ser Ala Asn Pro Met Gln Glu His Ala Ile Pro Pro Ser Asn
  1               5                  10                  15

Gln


<210> 282
<211> 45
<212> PRT
<213> Arabidopsis sp.

<400> 282
Lys Gly Asn Gln Arg Gln Ile Arg Thr Glu Asn Leu Lys Leu Ile Ile
  1               5                  10                  15

Arg Lys Thr Phe Asn Tyr His Phe Pro Tyr Phe Thr Arg Phe Ser Leu
                20                  25                  30

Glu Ser Leu Met Phe Met Asp Gly Val His Leu His Gly
            35                  40                  45


<210> 283
<211> 5
<212> PRT
<213> Arabidopsis sp.

<400> 283
Leu Leu Val His Ser
  1               5


<210> 284
<211> 21
<212> PRT
<213> Arabidopsis sp.
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<400> 284
His Phe Phe Phe Phe Asn Asn Val Leu Tyr Phe Arg Pro Leu Asn Ile
    1   5   10   15

Leu Cys Asp Met Val
                20

<210> 285
<211> 18
<212> PRT
<213> Arabidopsis sp.

<400> 285
Pro Val Arg Thr Leu Leu Lys Arg Met Ser Ile Ser Glu Asn Ile Leu
    1   5   10   15

Glu Asn

<210> 286
<211> 11
<212> PRT
<213> Arabidopsis sp.

<400> 286
Ser Leu Met Met Lys Leu Met Ser Val Gly Glu
    1   5   10

<210> 287
<211> 11
<212> PRT
<213> Arabidopsis sp.

<400> 287
Lys Ile Gly Leu Val Leu Pro Thr Ser Leu Pro
    1   5   10

<210> 288
<211> 9
<212> PRT
<213> Arabidopsis sp.

<400> 288
Leu Gln Asn Asn Phe Glu Val Thr Phe
    1   5

<210> 289
<211> 51
<212> PRT
<213> Arabidopsis sp.

<400> 289
Ser Phe Ala Gly Tyr Thr Ser Ile Arg Ile Lys Val Thr Phe Ile Leu
1   5   10   15

Gln Leu Glu Ile Asp Ala Arg Arg Lys Gly Asn Glu Phe Lys Phe Leu
                20   25   30

Asn His Ser Ala Arg Pro Asn Cys Tyr Ala Lys Val Leu Ser Arg Tyr
            35   40   45

Thr Leu Ser
        50

<210> 290
<211> 26
<212> PRT
<213> Arabidopsis sp.

<400> 290
Thr Asn Thr Asn Ile Ile Gln Thr Lys Ile Leu Met Leu Val Ser Leu
1   5   10   15

Val Lys Ser Cys Ile Asn Phe Thr Arg Arg
                20   25

<210> 291
<211> 16
<212> PRT
<213> Arabidopsis sp.

<400> 291
Leu Val Phe Ile Leu Lys Ile Phe Gln Glu Thr Gln Thr His Phe Lys
1   5   10   15

<210> 292
<211> 7
<212> PRT
<213> Arabidopsis sp.

<400> 292
Phe Phe Leu Val Glu Lys Ile
1   5

<210> 293
<211> 10
<212> PRT
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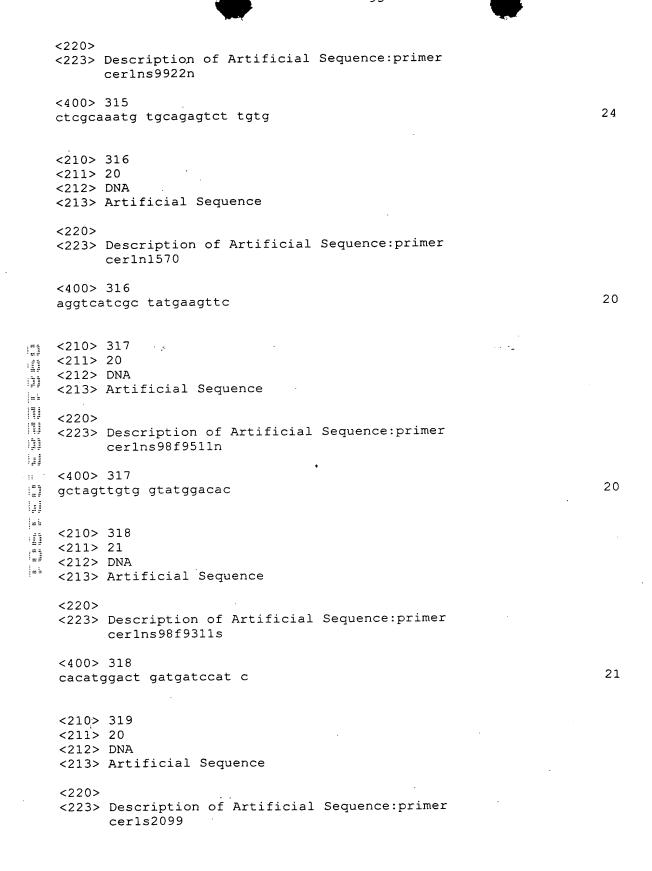
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Val Thr Lys Ile Tyr Gly Phe Val Cys Ser
1   5   10

<210> 294
<211> 57
<212> PRT
<213> Arabidopsis sp.

<400> 294
Glu Glu Ile Arg Gly Leu Val Tyr Leu Arg Arg Glu Gln Ser Lys Lys
1   5   10   15

Val Arg Ser Phe Ser Ser Thr Thr Ala Met Asp Gln Asn Met Arg Ile
            20   25   30

Gly Arg Val Val Glu Asn Leu Glu Arg Leu Val Leu Leu Lys Gly Leu
        35   40   45

Arg Lys Pro Val Gln Leu Val Ser Phe
    50   55

<210> 295
<211> 21
<212> PRT
<213> Arabidopsis sp.

<400> 295
Ser Glu Glu Lys Gln Gln Phe Lys Gln Ser Phe Phe Tyr Val Met Val
1   5   10   15

Tyr Gln Leu Ile Met
            20

<210> 296
<211> 66
<212> PRT
<213> Arabidopsis sp.

<400> 296
Cys Tyr Phe Val Leu Leu Asn Gln Asn Leu Ser Phe Cys Phe Ile Cys
1   5   10   15

Phe Arg Val Phe Cys Leu Tyr His Met Cys Leu Asn Phe Gln Ser Phe
            20   25   30

Leu Phe Val Phe Gln Phe Lys Asn Asn Val Tyr Val Val Ser Leu His
        35   40   45

Arg Pro Leu Glu Lys Lys Ser Phe Ala Gln Leu Tyr Ile Tyr Leu Val
    50   55   60

Phe Ile
65

<210> 297
<211> 4
<212> PRT
<213> Arabidopsis sp.

<400> 297
Arg Lys Ile Thr
 1

<210> 298
<211> 18
<212> PRT
<213> Arabidopsis sp.

<400> 298
His Lys Ser Val Val Arg Asn Val Gln Lys Cys Gln Asn Asn Gly Phe
 1   5   10   15

Tyr His

<210> 299
<211> 9
<212> PRT
<213> Arabidopsis sp.

<400> 299
Lys Lys Ile Leu Val Met Asn Glu Val
 1   5

<210> 300
<211> 18
<212> PRT
<213> Arabidopsis sp.

<400> 300
Val Leu Ala Arg Leu Val Leu Lys Arg Phe Ser Arg Phe Asn Phe Val
 1   5   10   15

Val Tyr

<210> 301
<211> 32
<212> PRT
<213> Arabidopsis sp.

<400> 301
Val Ile His Gly Arg Ile Ile Asn Lys Val Ala Val Ala Tyr Glu Arg
 1   5   10   15

Phe Tyr Phe Asn Val Asn Met Tyr Leu Met His Leu Thr Phe Ser Ile
                20   25   30

<210> 302
<211> 22
<212> PRT
<213> Arabidopsis sp.

<400> 302
Thr Asn Lys Asn Lys Lys Lys Glu Lys Ser Ser Leu Lys Ser Glu Ser
 1   5   10   15

Asn Tyr Phe Gln Lys Ile
            20

<210> 303
<211> 21
<212> PRT
<213> Arabidopsis sp.

<400> 303
Ile Ile Asn Leu Asn Val Trp Asn Arg Glu Arg Leu Leu Leu Asn Ile
 1   5   10   15

Asn Ala Lys Tyr Thr
            20

<210> 304
<211> 20
<212> PRT
<213> Arabidopsis sp.

<400> 304
Arg Cys Glu Lys His Val Gly Phe Val Glu Ser Leu Met Thr Thr Val
 1   5   10   15

Lys Trp Arg Asp
            20

<210> 305
<211> 23
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<220>
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      Cla-73

<400> 305
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<210> 306
<211> 24
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<220>
<223> Description of Artificial Sequence:primer cer1n2

<400> 306
tgtaacatta aggcctttcc tttt                                          24


<210> 307
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<212> DNA
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<220>
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      Nir-C-2-S-N

<400> 307
cggtcatcaa gtgagttatg aag                                           23


<210> 308
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
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<400> 308
ggtccaatcg gcaatgagt                                                19


<210> 309
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<400> 309
gtccaatcgg caatgagtag ag                                            22


<210> 310
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gtgtgcctaa cagtttccgc ac                                            22
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<210> 312
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<210> 313
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<220>
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<400> 313
tctggagagc agaaggaaga gtcg                                        24


<210> 314
<211> 22
<212> DNA
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<220>
<223> Description of Artificial Sequence:primer
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<400> 314
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<210> 315
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<212> DNA
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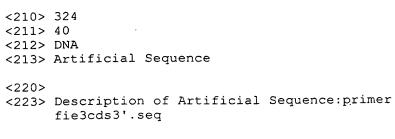
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ctcgcaaatg tgcagagtct tgtg                                    24


<210> 316
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
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      cer1n1570

<400> 316
aggtcatcgc tatgaagttc                                         20


<210> 317
<211> 20
<212> DNA
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<220>
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<400> 317
gctagttgtg gtatggacac                                         20


<210> 318
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<212> DNA
<213> Artificial Sequence

<220>
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<400> 318
cacatggact gatgatccat c                                       21


<210> 319
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
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<400> 319
gtaaccgttg gtttggtgat 20

<210> 320
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<212> DNA
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<220>
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E-4-N-N

<400> 320
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<210> 321
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<212> DNA
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<220>
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<400> 321
gcgataggta atcagagag 19

<210> 322
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<212> DNA
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<220>
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<400> 322
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<210> 323
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<212> DNA
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<220>
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cer1ns98f8483s

<400> 323
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<210> 324
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<213> Artificial Sequence

<220>
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